

M.Tech in Bioinformatics

Semester I

Group-A

BT-501 Advanced Proteomics

1. Proteomics: From Protein Sequence to Function by S.R. Pennington and M.J. Dunn. Viva Books Private Limited (2001).
2. Introduction to Proteomics by Daniel C. Liebler. Humana Press.
3. Discovering Genomics, Proteomics & Bioinfo, A.M. Campbell, C.S.H. Press, (2003)
4. Handbook of Comparative Genomics: Principles and Methodology by Cecilia Saccone, Graziano Pesole. Wiley-LISS Publication (2003).
5. Comparative Genomics by Melody S. Clark. Kluwer Academic Publishers (2001).

BT -502 Bioinformatics I

1. Introduction to Bioinformatics; Arthur M. Lesk; Oxford University Press, 2003
2. Sequence and Genome Analysis by David W. Mount - Cold Spring Harbor Laboratory, 1st edition; 2004.
3. Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins, by Andreas D. Baxeavanis, B. F. Francis Ouellette, Wiley-Interscience, 3rd Edition, 2004
4. Sequence structure and Database – Des Higgins, Willice Taylor, Oxford press 1st edition (2003).
5. Fundamental Concepts of Bioinformatics - Dan E. Krane, Michael L. Raymer, Pearson education First edition (2004).

BT -503 Population Genetics

1. Evolutionary Analysis, Scott Freeman, John C. Hendon, IV Edition, Pearson Edu.
2. Molecular Genetic Analysis of Populations, Hoelzel, 2nd Edition, Oxford Unity, 1998.
3. Genetics -Principles and Analysis Hartl and Jones, 5th edi Jones and Barlet, 2001.
4. Genetics of Populations P W Hedrick, 2nd Edition, Jones & Bartlett 2000
5. Principles of Population Genetics Hartl & Clark, Third Edition, Sinauer Associates Inc. 1997

Group B

BT-551 Biostatistics

1. Pagano, M. and Gaureau, K. 'Principles of Biostatistics', 7th ed. Thomson Learning.2007
2. Ross, S.M. 'Probability and Statistics for Engineers and Scientists' 3rd ed. Academic Press. 2005.
3. Walpole, R.E., Myers, R.H., Myers,S.L., Ye, K. 'Probability and Statistics for Engineers and Scientists' Prentice Hall, Inc. 2002.
4. Taneja, H.C. 'Statistical Method for Engineering and Sciences' IK Intenational,2009

BT-552 High-Throughput Structural Biology

1. Principles of Biochemistry, D. L. Nelson and M.M. Cox, Lehninger, W. H.Freeman; IV edi
2. Structural Genomics and High-Throughput Structural Biology, Michael Sundström, Martin Norin, Aled Edwards, CRC Press, 2006.
3. The Physical Basis of Biochemistry: The Foundations of Molecular Biophysics, P.R. Bergethon Springer, Corrected edition, 2000.
4. Principles of Physical Biochemistry K.E van Holde, C.Johnson, and P.Shing Ho, Prentice Hall, Second edition, 2005

5. Lecture Notes on Computational Structural Biology, Zhijun Wu, World Scientific Publishing Co. Pte. Ltd. 2008.

Semester II

Group C

BT-601 Bioinformatics II

1. Bioinformatics: Genomics and Post-Genomics, Frédéric Dardel, François Képès, Noah Hardy, ISBN: 978-0-470-02001-2, John Wiley & Sons India Pte. Ltd.
2. Bioinformatics: Theory and Practice, Chikhale NJ and Gomase VS, ISBN:978-81-8318-831-9, Himalaya Publication House.
3. Discovering Genomics, Proteomics and Bioinformatics, Campbell, ISBN:978813171 5598, Pearson Education.
4. Proteomics: Theory and Practice, Gomase VS and Chikhale NJ, Himalaya Publication House
5. Essentials of Genomics and Bioinformatics, Christoph W. Sensen, ISBN: 978-3-527-30541-4, John Wiley & Sons India Pte. Ltd.

BT-602. Professional Elective I

BT-6021. Biological Database Management

1. Database System Concept By C.J. Date.
2. Database System By Aho. Ullman.
3. Database Systems By Rob, Coronel.
4. Database Management Systems, Raghu Ramakrishnan & Johannes Gehrke,
5. Database Modeling and Design: Logical Design, Toby J. Teorey, Sam S. Lightstone, Tom Nadeau, Publisher: Morgan Kaufmann, 4th Edition, 2005.

BT-6022. Advanced Genetic Engineering

1. Principles of gene manipulation by R.N. Old & SB. Primrose (1994) Blackwell Scientific Publications.
2. DNA cloning I & II by DM. Glover & B.D. Hames (1995) IRL Press.
3. PCR strategies by M.A. Innis, DH.Gelfand & J.J. Sninsky (1995) Academic Press.
4. Plant Genomics: Methods and Protocols, Daryl J. Somers, Peter Langridge and J. Perry Gustafson, Humana Press, 2009.
5. Plant Genomics and Proteomics, CHRISTOPHER A. CULLIS, John Wiley & Sons, 2004
6. Plant Bioinformatics: Methods and Protocols, David Edwards, Humana Press, 2007.

BT -6023. Web Application Development

1. Perl and Apache, Adam McDaniel, Wiley Publishing Inc., 2010
2. Beginning Perl for Bioinformatics, James Tisdall, O'Reilly, 1st Edn., 2001.
3. Developing Web Applications with Apache, MySQL, memcached and Perl, Patrick Galbraith, Wiley Publishing Inc., 2009
4. Beginning Perl Development, Steve Suehring, Springer-Verlag New York, Inc., 2006
5. Database Management Systems, Raghu Ramakrishnan & Johannes Gehrke, II edi

BT-603. Professional Elective II

BT-6031. Advanced Drug Delivery Systems

1. Drug Delivery: Engineering Principles for Drug Therapy, M. Salzman, Oxford University Press, 2001.
2. Drug Delivery and Targeting, A.M. Hillery, CRC Press, 2002.
3. Drug Delivery: Principles and Applications, B. Wang, Wiley Interscience, 2005

BT-6032. Drug Design and Discovery

1. Comprehensive Medicinal Chemistry, C. Hansch (Ed.); (Vols. I-VI) Academic Press, 1990.
2. Design of Enzyme Inhibitors as Drugs, M. Sandler and H. J. Smith; Oxford Univ. Press, 1989.
3. Drug Discovery and Design: Medical Aspects, J. Matsoukas and T. Mavromoustakos, IOS Press, 2002.
4. Drug Design: Cutting Edge Approaches, Darren R. Flower, The Royal Society of Chemistry, Cambridge, 2002.
5. Protein Folding and Drug Design, R. A. Broglia and L. Serrano, IOS Press, 2007.

BT-6033. Chemoinformatics

1. Chemoinformatics: theory, practice, & products by Bary A. Bunin, Springer
2. Chemoinformatics: a textbook by Johann Gasteiger, Wiley .
3. Methods in molecular biology volume 201, Combinatorial library methods and protocol edited by Lisa Bellavance English Humana Press
4. An introduction to chemoinformatics by Andrew R. Leach, Valerie J. Gillet, Kluwer Academic Publishers

BT-651. Professional Elective III**BT-6511. Computer Aided Drug Design**

1. Computer Applications in Pharmaceutical Research and Development, Wang, Binghe, ISBN-10: 0-471-73779-8, John Wiley & Sons India Pte. Ltd.
2. Engineering Chemistry, R.V. Gadag and A. Nityananda Shetty, ISBN: 8188237833 I.K. International Publishing House Pvt. Ltd
3. Virtual Screening in Drug Discovery, Juan Alvarez and Brian Shoichet, ISBN-13: 978-0824754792, CRC Press
4. Biological Thermodynamics, Donald T. Haynie, ISBN:9780521704045, Cambridge University Press India Private Limited
5. Chemoinformatics in Drug Discovery, Tudor I. Oprea, Raimund Mannhold, Hugo Kubinyi, Gerd Folkers, ISBN: 978-3-527-30753-1, John Wiley & Sons India Pt L.

BT - 6512. Computer Graphics

1. Computer Graphics by D.Hearn and M.P. Baker
2. Computer Graphics - A programming approach by Harriyton.
3. Procedural Elements of Computer Graphics by Roger.
4. Three Dimensional Computer Graphics by Folley and Dam
5. Computer Graphics: Principles and Practice, James Foley, Andries van Dam, Steve Feiner and John Hugues Second Edition

BT-6513. Pharmacogenomics and Personalized Medicine

1. Pharmacogenomics: The Search for the Individualized Therapies", Licinio, Julio and Ma-Li Wong, Wiley-VCH, 2002
2. Pharmacogenomics: An Approach to New Drugs Development, Chakrabarthy, Chiranjib and Bhattacharyya, Atane, 2004.
3. Pharmacogenomics: Social, Ethical and Clinical Dimensions, Rothstein, Mark, A. Wiley-Liss, 2003.
4. Pharmacogenomics in Drug Discovery & Development, Qing Yan, Humana Press, 2008
5. Pharmacogenomics Methods and Protocols, Federico Innocenti, Humana Press, 2005.

BT-652. Professional Elective IV**BT -6521. Combinatorial Methods in Biopharmaceuticals**

1. Fenniri, Hicham, 'Combinatorial Chemistry', Oxford University Press, 2000.
2. Block J.H. and Beale, J.M., 'Wilson & Gisvolds Text book of Organic Medicinal and Pharmaceutical Chemistry', 11th Edition, Lippincott Williams & Wilkins, 2004.
3. Fassina, G. "Combinatorial Chemistry and Technologies: Methods and Applications", 2nd Edition, CRC Press, 2005.
4. Combinatorial Chemistry: Synthesis, Analysis, Screening, Gunther Jung, WILEY-VCH Verlag GmbH, 2001
5. Handbook of Combinatorial Chemistry: Drugs, Catalysts, Materials, K. C. Nicolaou, Wiley-VCH, 2002.

BT -6522 Data Warehousing and Data Mining

1. Jiawei Han and Micheline Kamber "Data Mining Concepts and Techniques" Second Edition, Elsevier, Reprinted 2008.
2. Alex Berson and Stephen J. Smith "Data Warehousing, Data Mining & OLAP", Tata McGraw – Hill Edition, Tenth Reprint 2007.
3. K.P. Soman, Shyam Diwakar and V. Ajay "Insight into Data mining Theory and Practice", Easter Economy Edition, Prentice Hall of India, 2006.
4. G. K. Gupta "Introduction to Data Mining with Case Studies", Easter Economy Edition, Prentice Hall of India, 2006.
5. Pang-Ning Tan, Michael Steinbach and Vipin Kumar "Introduction to Data Mining", Pearson Education, 2007

BT-6523. Genomics: From Human Genome Project to Medical Applications

1. Human Molecular Genetics, Third Edition (2003) T. Strachan and A.P. Read, Garland Science Publication.
2. Molecular Cell Biology, Sixth Edition (2007) H. Lodish, A. Berk, and C.A. Kaiser, W. H. Freeman & Co Ltd.
3. Cardiovascular Genetics and Genomics for the Cardiologist (2007) Victor J. Dzau and Choong-Chin Liew, Blackwell Publishing.
4. Genomics: The Science of Technology Behind the Human Genome Project (1999), Charles R. Cantor and Cassandra L. Smith, John Wiley & Sons, Inc.
5. A Century of Mendelism in Human Genetics (2005), Milo Keynes, A.W.F. Edwards and Robert Peel, CRC Press.

BT-701. Professional Elective V**BT-7011. Immunoinformatics**

1. Immunology; Richard A. Goldsby, Thomas J. Kindt, Barbara A. Osborne, Janis Kuby; W.H. Freeman & Company, 5th edition, Pages 19-504, 2003.
2. Roitt's Essential Immunology; Ivan M. Roitt, Peter J. Delves Blackwell Science Ltd., 10th Edition, 2001.
3. Immunoinformatics: predicting Immunogenicity in-silico Darren R. Flower Humana Press Pages 1-309.
4. Instant Notes in Immunology; P.M. Lydyard, A. Whelan, M.W. Fanger BIOS Scientific Publishers Ltd, 1st Edition, 2003.
5. An Introduction to Immunology; C.V. Rao; Narosa Publishing House, 1st Edition 2004.

BT-7012. Medical Bioinformatics

1. Handbook of Medical Informatics J.van Bemmel (Editor), M.A. Musen (Editor), Mark Musen (Author) Springer-Verlag published
2. Clinical Decision Support Systems : Theory and Practice (Health Informatics) by Eta S. Berner (Editor), M. J. Ball (Editor) Springer-Verlag, New York Inc
3. Computer-Based Patient Record: An Essential Technology for Health Care Revised Edition by Committee on Improving the Patient Record Institute of Medicine, Richard S. Dick, and Elaine B. Steen (Paperback - Jan. 1997).

BT-7013. Genomics and Medicine

1. Bioinformatics: Genomics and Post-Genomics, Frédéric Dardel, François Képès, Noah Hardy, ISBN: 978-0-470-02001-2, John Wiley & Sons India Pte. Ltd.
2. Bioinformatics: Theory and Practice, Chikhale NJ and Gomase VS, ISBN:978-81-8318-831-9, Himalaya Publication House
3. Discovering Genomics, Proteomics and Bioinformatics, Campbell, ISBN:9788131715598, Pearson Education
4. Essentials of Genomics and Bioinformatics, Christoph W. Sensen, ISBN: 978-3-527-30541-4, John Wiley & Sons India Pte. Ltd.
5. Genomics Applications in Human Biology, Sandy B. Primrose and Richard M. Twyman, ISBN: 1-4051-0819-3, Blackwell Science Ltd
6. Introduction to Computational Genomics: A Case Studies Approach, Nello Cristianini, Matthew W. Hahn, ISBN-13:9780521671910, Cambridge University Press India Pvt.

BT-7014. Systems Biology

1. Systems Biology and Synthetic Biology, Pengcheng Fu and Sven Panke, John Wiley & Sons Inc (2009).
2. Introduction to Systems Biology, Sangdun Choi, Humana Press (2007).
3. Systems Biology in Drug Discovery and Development: Methods and Protocols, Qing Yan, Humana Press (2010).
4. Systems Biology: Dynamic Pathway Modelling, Olaf Wolkenhauer (2005)

BT-702. Professional Elective VI**BT-7021. Protein Networks and Pathway Analysis**

1. Protein Networks and Pathway Analysis, Yuri Nikolsky and Julie Bryant, Springer Protocols, Humana Press (2009).
2. Pathway Analysis and Optimization in Metabolic Engineering, Nestor V. Torres and Eberhard O. Voit, Cambridge University Press (2002).
3. Pathway Analysis for Drug Discovery, Anton Yuryev, John Wiley & Sons, (2008).

BT-7022. Resource Planning & Management in Bioinformatics

1. ERP Demystified, Alexis Leon, Tata McGraw Hill, 1999.
2. Concepts in Enterprise Resource Planning, Joseph A. Brady, Ellen F. Monk, Bret J. Wangner, Thomson Learning, 2001.
3. BAREACT, Indian Patent Act 1970 Acts & Rules, Universal Law Publishing Co. Pvt. Ltd., 2007
4. Kankanala C., Genetic Patent Law & Strategy, 1st Edition, Manupatra Information Solution Pvt. Ltd., 2007
5. Essentials of Management by H. Koontz, H. Weihrich and C. O'Donnell Publisher: McGraw-Hill/Irwin
6. The Practice of Management by P. Drucker, Publisher: Harper Business.

BT-7023. Nanotechnology in Health Care

1. Chemical Sensors and Biosensors; Brian, R Eggins; Wiley; New York, Chichester; 2002.
2. Biosensors and modern biospecific analytical techniques, Wilson & Wilson's Comprehensive Analytical Chemistry; Ed. L Gorton; Elsevier, Amsterdam, London; 2005.
3. The Immunoassay Handbook; Ed. David Wild; 3rd ed.; Amsterdam: Elsevier; 2005.
4. Electrochemical Methods: Fundamentals and Applications; Allen J Bard and Larry R Faulkner; Wiley, New York, Chichester : 2nd ed.; 2001.
5. Ultrathin Electrochemical Chemo- and Biosensors: Technology and Performance in Springer Series on Chemical Sensors and Biosensors; Volume Two; Ed. Vladimir M. Mirsky; Springer, Berlin; 2004

BT-7024. Metabolomics

1. Metabolomics: A Powerful Tool in Systems Biology, J. Nielsen and M.C. Jewett, Springer-Verlag Berlin Heidelberg (2007).
2. Metabolomics: The Frontier of Systems Biology, M. Tomita and T. Nishioka, Springer-Verlag Tokyo (2005).
3. Metabolomics: Methods and Protocols, Wolfram Weckwerth, Humana Press (2007).