KLEF
DEPARTMENT OF BIOTECHNOLOGY
MINUTES OF BOS (2016-17)

Particulars of Meeting conducted:

Type of Meeting	BOS
Department conducting the Meeting	Biotechnology
Number of the Meeting	15
Date of Meeting	09/06/2016
Time of Meeting	1:30 PM
Venue of Meeting	Faculty Conference Hall, Biotechnology

Agenda items to be discussed:

Agenda Item number	Agenda Item Description	Resolution
BT-BOS-16001	To revise probability and statistics syllabus for Y15 batch	The BOS unanimously resolved to revise probability and statistics syllabus for Y15 batch. (Annexure-1)
BT-BOS-16002	To Change of course name structural biology to systems biology for Y13 Batch/B-Tech	The BOS resolved to recommend change of course name structural biology to systems biology for Y13 Batch/B-Tech. (Annexure-2)
BT-BOS-16003	To introduce C Programming and Data structure 1 and 2 for Y16 Batch/B-Tech.	The BOS resolved to recommend C Programming and Data structure 1 and 2 for Y16 Batch/B-Tech.. (Annexure-3)

Members Present:

S.No	Name of the person	Institution	Department	Designation	Position of the person in the meeting	Signature
1	Dr K Srinivasulu	KLEF	Biotechnology	Associate Professor	Chairman	
2	Dr P Sudhakar	A N University, Guntur	Biotechnology	Associate Professor	External Member	
3	Dr BJK Singh	KLEF	Biotechnology	Associate Professor	Internal Member	
4	V Praveen Kumar	KLEF	Biotechnology	Assistant Professor	Internal Member	
5	Dr M Sudhamani	KLEF	Biotechnology	Associate Professor	Internal Member	
6	Dr B Mahendran	KLEF	Biotechnology	Associate Professor	Internal Member	

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Based on the feedback received by DAC, the following recommendations were approved in the BOS.

1. Revisions in Probability and Statistics syllabus were approved for Y15 batch (B-Tech).
2. The change of course name structural biology to systems biology was approved for Y13 Batch/B-Tech.
3. C Programming and Data structure 1 and 2 courses were approved for Y16 Batch/B-Tech.

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HOD-BT
Dr K Srinivasulu

K L UNIVERSITY
DEPARTMENT OF BIOTECHNOLOGY
MINUTES OF DEPARTMENT ACADEMIC COMMITTEE MEETING(2016-17)

The Department Academic Committee meeting was conducted in HOD, Biotechnology, seminar hall on 11/04/2016 at 1:00 pm.

Agenda:

1. To discuss the feedbacks received from stake holders on curriculum
2. To propose the curriculum for B-Tech Y16 admitting batch B-Tech and M-Tech.
3. Any other points with the permission of the DAC chairman

The following members were present:

1. Dr.K Srinivasulu	Head of the Department
2. Dr.BJK Singh	Professor
3. Dr. V Praveen Kumar	Associate Professor
4. Dr.B Mahendran	Associate Professor
5. Dr. M Sudhamani	Associate Professor
6. Dr. V Badramurthi	Assitant Professor

The following points were discussed and resolved:

1. Upon discussing the feedback from students, the committee resolved to recommend the following to BOS
   a. Revisions in probability and statistics syllabus for Y15 batch/B-Tech (Annexure 1)
   b. C Programming and Data structures-1 and 2 instead of C Programming and Data structure for y16 Batch/BTech. (Annexure 3)
2. DAC members suggested to consider, Change of course name structural biology to systems biology for Y13 Batch/B-Tech.(Annexure 2)
3. Upon considering above mentioned feedbacks and surveying through the policy documents in relevance to, Human Resource Development Policy, Govt. of India, National Skill Development Corporation, Govt. of India, ABET, NBA norms, AICTE statutory norms , it is resolved to propose enclosed Program development documents and curriculum for B-Tech -Biotechnology Program for BOS approval

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Dr.K Srinivasulu
(Head of the Department)

Annexure: 1

PROBABILITY AND STATISTICS

L– T–P : 3-0-0 **Credits :** 3

Syllabus:

Probability and Random variables: Definitions of probability, Sample space, Axioms of probability, Conditional probability, Addition, Multiplication and Bayes' theorem. Randomvariables, Joint and marginal probabilities, Mathematical expectation. **Standard discrete andcontinuous distributions:** Definitions and simple properties of Binomial, Poisson, Geometric, Hyper-Geometric, Uniform, Exponential, Weibull and Normal distributions, Applications of the above distributions. **Correlation and Regression:** Correlation coefficient for grouped and ungrouped data, Rank correlation. Linear and Non-Linear Regression. **Tests of Hypothesis:** Sampling distributions- Point and interval estimation. Confidence limits for interval of mean and standard deviation. Small sample tests - Test for mean, variance using t, chi-square and F distributions. Chi-square test for independence of attributes and goodness of fit. Large sample tests-Test for mean with known and unknown standard deviation and test for standard deviation. **Analysis of Variance:** General principles, Completely randomized design, Randomized block designs and Latin square design.

Text Books:

Richard A Johnson, "Miller & Freund's Probability and Statistics for Engineers", PHI, New Delhi, 11th Edition (2011).

Reference Books:

1. Ronald E. Walpole, Sharon L. Myers, Keying Ye, "Probability and Statistics for Engineers and Scientists", 8th Edition Pearson Pub.

2. S C Gupta and V K Kapoor, "Fundamentals of Mathematical Statistics", 11th Edition ,S Chand & Sons, New Delh

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Annexure: 1

BIOSTATISTICS

L– T–P : 3-0-0 Credits : 3

Syllabus:

UNIT – 1: Presentation of data & Measures of central tendency: Frequency distribution, graphical presentation of data by histogram, frequency curve and cumulative frequency curves. Mean medium, mode and their simple properties (without derivation) and calculation of median by graphs, range, mean deviation, standard deviation and coefficient of variation.**UNIT – II: Probability and distribution:**Random distributions, events exhaustive, mutually exclusive and equally likely. Definition of probability, definitions and simple properties of binomial, poisson and normal distributions and their inter relations. **Sampling:** concept of population and sample, random sample, methods of taking simple random sample.**UNIT – III: Correlation and Regression:**Bivariate data, simple correlation and regression coefficients and their relations. Limits of correlation coefficients, effect of change of origin and scale on correlation coefficient, linear regression and equations of line of regression, association and independence of attributes. **UNIT – IV: Tests of Significance:** Sampling distribution of mean and standard error, Large sample tests (Test for an assumed mean and equality of two population means with known SD). Small sample tests (t-test for an assumed mean and equality of means of two populations when sample observation are independent). Paired and unpaired t-test for correlation and regression coefficient. T-test for comparison of variances of two populations. Chi-square test –independence of attributes, goodness of fit, and homogeneity of sample.**UNIT – V: Experimental designs:**Principles of experimental design, completely randomized design, randomized block design and Latin square design. Simple factorial experiments of basic types. Confounding in factorial experiments. Analysis of variance (ANOVA) and its use in the analysis of RBD, F-test.

Recommended text books:

1. Norman T.J. Bailey, Statistical Methods in biology (3rd Edition), Cambridge University Press (1995)
2. Richard A Johnson, Probability and Statistics for Engineers, 6th Edition, Prentice Hall, 2000.

Recommended References:

1. Bernard Rosner, Fundamentals of Biostatistics, 5th Edition, Thomson Brooks/Cole, 2000.
2. S.C.Gupta and V.K.Kapoor –Fundamentals of Mathematical Statistics, 9th Extensively revised edition, Sultan Chand & Sons, 1999

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Annexure: 2

SYSTEMS BIOLOGY

Course Code : 15 BT 4165 **L –T – P:** 3-0-0

SYLLABUS:

Structural biology of Nucleic acids-Types of Double helices; Structural and Geometrical parameters of each and their comparison. Dynamics and types of interactions of DNA with proteins, and small molecules. RNA – Secondary structures, Tertiary structures, t-RNA tertiary structure. **Protein dynamics**-Protein Purification &Crystallization methods, Principles of X-ray Diffraction, Brags Law. Phase Determination, Calculation of Electron Density Map, Interpretation of the electron density map, Refinement of the Structures. **Techniques for structural biology**-Principle of NMR Spectroscopy, Magnetic properties of nuclei, Energy Levels of proton during spin, Chemical Shift, Coupling Constants, Shielding, Determination of secondary structure NOSEY, COSY. **Structure predictions**-Basic principles of secondary structure prediction methods, Algorithms of Chou Fasman, GOR, PHD, PSI-PRED, Stereochemical method of Lim and Neural network method, concepts in measuring the accuracy of predictions. **Structural elucidation**-Steps involved in Homology Modeling. Fold Recognition andab-initiomethods, Derivation and significance of Ramachandran Plot, Root Mean Square Deviation (RMSD), Energy Plot based on Potential of mean force, Packaging Quality, Helical Wheel, Hydrophobicity profiles, Amphiphilicity detection, Transmembrane prediction methods. Concepts in 3D structure comparison, purpose of structure comparison, Algorithms for structure comparison (FSSP, VAST & DALI), Structure-function relation, Function inference from structure.

Recommended Textbooks:

1. Arthur M. Lesk, "Introduction to Protein Science" Oxford University Press(2004).

2. Arthur M. Lesk, "Introduction to Protein Architecture" ,Oxford University Press(2001).

Reference textbooks:

1.McPherson, "Introduction to Macromolecular Crystallography" ,John Wiley Publication(2003)

2.Philip E. Bourne, Helge Weissig, "Structural Bioinformatics".

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Annexure: 2

STRUCTURAL BIOLOGY

Course Code : 15 BT 4165 **L –T – P:** 3-0-0

SYLLABUS:

Structural biology of Nucleic acids-Types of Double helices; Structural and Geometrical parameters of each and their comparison. Dynamics and types of interactions of DNA with proteins, and small molecules. RNA – Secondary structures, Tertiary structures, t-RNA tertiary structure. **Protein dynamics**-Protein Purification &Crystallization methods, Principles of X-ray Diffraction, Brags Law. Phase Determination, Calculation of Electron Density Map, Interpretation of the electron density map, Refinement of the Structures. **Techniques for structural biology**-Principle of NMR Spectroscopy, Magnetic properties of nuclei, Energy Levels of proton during spin, Chemical Shift, Coupling Constants, Shielding, Determination of secondary structure NOSEY, COSY. **Structure predictions**-Basic principles of secondary structure prediction methods, Algorithms of Chou Fasman, GOR, PHD, PSI-PRED, Stereochemical method of Lim and Neural network method, concepts in measuring the accuracy of predictions. **Structural elucidation**-Steps involved in Homology Modeling. Fold Recognition andab-initiomethods, Derivation and significance of Ramachandran Plot, Root Mean Square Deviation (RMSD), Energy Plot based on Potential of mean force, Packaging Quality, Helical Wheel, Hydrophobicity profiles, Amphiphilicity detection, Transmembrane prediction methods. Concepts in 3D structure comparison, purpose of structure comparison, Algorithms for structure comparison (FSSP, VAST & DALI), Structure-function relation, Function inference from structure.

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