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SRI SATYA SAI UNIVERSITY OF TECHNOLOGY AND MEDICAL SCIENCES

BOARD OF STUDIES MEETING(BOS) & SYLLABUS

Department/Program-Science /PhD

2017-18 TO 2021-22

www.sssutms.co.in

Opp.Oilfed Plant, Bhopal-Indore Road,Sehore (M.P), Pin - 466001



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SRI SATYA SAI

**UNIVERSITY OF TECHNOLOGY & MEDICAL SCIENCES
SEHORE (MP)**



Research Methodology

Ph.D. Course Work (I) Syllabus

Research Methodology

Unit I:- Research Foundation:

Evolution of scientific inquiry and Research, definition, characteristics , types and objectives of Research, importance of Research methodology in scientific Research. Selection and formulation of Research problem. Research design: meaning of Research design, features of good research design , inductive, deductive, and development of models.

Hypothesis: Different types and significance, development of working Hypothesis, Null Hypothesis.

Unit II: - Review of Literature:

Meaning and Significance of review of literature, literature search procedure , sources of literature: primary and secondary sources, web source, critical literature review , Review Quality Instrument(RQI) .

Unit-III:- Data Collection And Analysis:

Data Collection Sources of data – primary, secondary and tertiary Types of data- categorical, nominal and ordinal methods of data collection: observations, field investigations, Direct studies: reports, record, or experimental observations.

Data analysis: graphical representation, descriptive analysis, inferential analysis, correlation analysis and regression analysis. Measure of central tendency, measure of dispersion, measure of variation, Measure of central tendency vs measure of dispersion, normal distribution, measure of skewness and interpretation, purpose and use of chi-square test. Data analysis by using statistical software's: MATLAB, MINITAB and SPSS. Hypothesis Testing, generalization, interpretation and modeling.

Unit IV :- Scientific Writing And Ethics:

Scientific Writing: Structure and components of research paper and thesis writing. Different steps in the preparation: Layout, structure, language, illustrations, tables, citation styles and Bibliography.

Ethics: Ethical issue, Ethical committees, commercialization, copy right , royalty, intellectual property, rights and patent laws, plagiarism, citation, acknowledgement, Reproducibility and accountability



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Unit-V:- Computer Applications and Statistics:

Computer Applications Application of computer in research, M.S. Office and its applications. Internet and its applications: E-mail, www, Web browsing, acquiring technical skills, drawing inferences from data.

Statistics Introduction to Statistics - Probability Theories - Conditional Probability, Poisson distribution, Binomial Distribution and Properties of Normal Distributions, Estimates of Mean, mode, median and Proportions.

References:

1. Kothari, C.R.(2008). Research Methodology: Methods and Techniques. Second Edition New Age International Publishers, New Delhi.
2. Sinha, S.C. and Dhiman, A.,2002. Research Methodology, Ess Ess Publications.2 volumes.
3. Gupta S.P. (2008). Statistical Methods. 37thed. (Rev)Sultan Chand and Sons.New Delhi. 1470 p.
4. Leon & Leon (2202). Internet for everyone, Vikas Publishing House.
5. Wadehra, B.L.2000, Law relating to patents, trade marks, copyright designs and geographical indications. Universal Law Publishing.
6. Research Methodology Dr PM Bulakh,Dr P. S. Patki and DrAS Chodhary 2010OPublished by Expert Trading Corporation Dahisar West, Mumbai 400068
7. Statistical method for Research works by fisher R.A. Cosmo publication, New Delhi ISBN : 81-307-0128-6
8. Design and analysis of experiments by montgomery D.C., john wiley ,ISBN: 0471260088
9. MINITAB online manual
- 10.Methodology of Research in Social Science by O.R. Krishnaswamy and Rangnatham, Himalaya Publication Hore, ISBN: 8184880936
- 11.SPSS online manual.




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MINUTES OF BOARD OF STUDIES MEETING

Name of Department: **Biochemistry**

Minutes of Board of Studies Committee Meeting Held on Dated **07/04/2021**

The Board of Studies Committee Meeting was held in the room of Dean Cabin at 2.00 pm on 07/04/2021

Following members were present,

- | | |
|--------------------------|-------------------|
| 1. Dr. Syed Shahab Ahmed | - Chairman |
| 2. Prof. Mohit Arya | - External Member |
| 3. Dr. Shobha Malviya | - Member |

The Chairman of Board of Studies Committee welcome and appreciated the efforts put up the faculty for Progress of the departmental activities. The following Agenda points were discussed and resolved.

Agenda :- The revision of the syllabus of Ph.d course work I & II **Biochemistry**.

Discussion:-

Discussed by the members of the Board of Studies that in programmes Ph.D **Biochemistry** Science changes are incorporated with the syllabus of first semester will changed subject portion would be revised and second semester will included as per concern of scholars. The maximum contents of the revised syllabus have been taken from the syllabus published by Madhya Pradesh Higher Education from time to time



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Registrar

Sri Satya Sai University of Technology
& Medical Sciences Sehore (M.P.)

Resolution:-

It is resolved that The revised syllabus were discussed and recommended for implementation from academic session 2021-22 for the Ph.D **Biochemistry** students, admitted in session 2021-22 Minutes of the meeting may be placed before the academic council for approval

Chairman thanks the members for peaceful conduction of meeting.

Signature of All members (Including Chairperson)

Maint boys

Dr. shobha malys

Dr. S. Shabab Ahmad






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SUBJECT SPECIALIZATION-I
SUBJECT: BIOCHEMISTRY

UNIT- I

Cell Biology, Membrane Biology and Bioenergetics : Introduction to cell biology, Tools of cell biology, Structure of different cell organelles, Protein trafficking, Cytoskeletal proteins, Cell wall and extracellular matrix, Cell cycle, cell death and cell renewal. Introduction to biomembranes, Membrane structures, Membrane dynamics, Membrane transport, Vesicular transport and membrane fusion, Introduction to bioenergetics, Oxidative phosphorylation, Photophosphorylation, Features of membrane proteins.

UNIT-II

Proteins:Introduction to peptides and proteins, Extraction of proteins for downstream processing, Separation techniques, Characterization of proteins, Covalent structure and 3D - structures of proteins, Protein folding and conformational diseases, Introduction to protein structure databases, Myoglobin and haemoglobin, Specialized proteins – antibodies, actin - myosin motors and membrane proteins.

UNIT-III

Enzyme:Fundamentals of enzymes, Features of enzyme catalysis, Enzyme kinetics, Bisubstrate reactions, Enzyme inhibition, Mechanism of action of enzymes, Regulation of enzyme activity, Involvement of coenzymes in enzyme catalysed reactions, Applications of enzymes, Relation to diseases, therapy and diagnosis.

UNIT-IV

Metabolism of Carbohydrates, Lipids, Amino Acids and Nucleotides :Basic design of metabolism, Glycolysis, Gluconeogenesis and pentose phosphate pathway, Glycogen metabolism, Citric acid cycle, Synthesis of carbohydrates, Fatty acid oxidation, Fatty acid synthesis, Biosynthesis of eicosanoids, cholesterol, steroids and isoprenoids, Biosynthesis of membrane lipids. Overview of amino acid metabolism, Catabolism of amino acids, Biosynthesis of amino acids, Precursor functions of amino acids, Biosynthesis of purine and pyrimidine nucleotides, Deoxyribonucleotides and synthesis of nucleotide triphosphate, Degradation of purine and pyrimidine nucleotides, Integration of metabolism. Metabolic disorders and diseases.

UNIT -V

Genetic Engineering and Biotechnology :Introduction to recombinant DNA technology, Cloning vectors for prokaryotes and eukaryotes, Joining of DNA fragments, Introduction of DNA into cells and selection for recombinants, Methods for clone identification, Polymerase chain reaction, DNA sequencing, Expression of cloned genes, Applications of genetic engineering in Biotechnology.


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(Minutes of the Board of Studies Committee Meeting)

School Of Engineering

Department of Computer Application

Board of Studies Meeting of Computer Application Department was conducted on 25.02.2021 at 1.30 PM, Following members were present.

Dr. Rajeev Pandey UTT RGPV, Bhopal	External Member
Dr. Sanjay Sharma OIST Bhopal	External Member
Dr. Jitendra Sheetlani (MCA Department)	Chairman
Mr. Arif Hakeem Asst. Prof. (CSE)	Member
Dr. Harsh Pratap Singh Asst. Prof (CSE)	Member
Mr. Manoj Verma Asst. Prof (CSE)	Member

Minutes of Meeting:

The Chairman of BOS opened the meeting by welcoming and introducing the external members, to the internal and thanked them for accepting to become the member of the Board of Studies.

Agenda:

The revision of the syllabus of programs Ph.D.(Computer Application).

Discussion:

Revision of the syllabus of the programs Ph.D.(Computer Application) is discussed by the members of the Board of Studies. In which it is discussed that in the syllabus of first semester of Ph.D.(Computer Application) will be changed. The maximum contents of the revised syllabus have been taken from the advance technology and First semester will include the topic Unit 1 Basics of Computer and Research, Unit 2 Computer organization, Unit 3 Using Internet for Research, Unit 4 Data processing tools & techniques for Research and Unit 5 Research Related Software's .

Resolution:-

After review of the revised syllabus, the Board of Studies members discussed and finalized the revision made in the syllabus with the following suggestions.

- 1) It is resolved that The revised syllabus were discussed and recommended for implementation from academic session 2021-22 for the Ph.D. (Computer Application) students, admitted in session 2021-22



[Signature]
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- 2) The Chairperson informed the members that syllabus has been revised and changes will be included in the teaching plan in due course.
- 3) The syllabus of Ph.D. (Computer Application) Second semester was deliberated and suggested that it is provided to student according to the specialization selected by student.

Members of Board of Studies approved the revised syllabus and question paper pattern and recommended the same to be forwarded to the Academic Council for their approval.

Chairman thanks the members for peaceful conduction of meeting.

Signature of All members (Including Chairperson)

Dr. Rajeev Pandey UIT RGPV, Bhopal

Dr. Sanjay Sharma OIST Bhopal

Dr. Jitendra Sheetlani (MCA Department)

Mr. Arif Hakeem Asst. Prof. (CSE)

Dr. Harsh Pratap Singh Asst. Prof (CSE)

Mr. Manoj Verma Asst. Prof (CSE)

[Handwritten signatures of all members listed above, including the Chairperson.]



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SUBJECT SPECIALIZATION-I
SUBJECT: COMPUTER APPLICATION

UNIT-I

Basics of Computer and Research: Brief history of computers, Generation of Computers, Characteristics of Computers, Computer memory, Basic computer organization; System software, Application software, introduction to operating system, single user, multi-user, multi-tasking single tasking, application of computer for Research, MS-windows, Linux.

UNIT-II

Computer organization: Introduction of hardware & software of computers, Memory organization; Memory Maps, Memory Hierarchy, Cache Memory -Organization and mappings. Associative memory. Virtual memory, Memory Management Hardware.

UNIT-III

Using Internet for Research: Internet, Intranet, Extranet, Website. Internet and its application: E-mail, WWW, Web browsing, acquiring technical skills, drawing inferences from data, E-communication and E-collaboration. Research tools for better computing Internet, Use of E-Journals, Use of E-library, searching the keyword search engines.

UNIT-IV

Data processing tools & techniques for Research: Use of word processing, Research publishes tool- MS-Word, Graphics tool- MS-Excel, spreadsheet, MS-Power Point: Creating presentations and adding effects and database software. Plotting of graphs.

UNIT-V

Research Related Software's: software tools like MAT Lab, SPSS, PsiLAB or free ware tools. Data analysis software-SPSS: Definition, objectives and features, Data entry creating variables, switching to data labels,

References:

1. Fundamental of Computer By Pradeep K. Sinha.
2. Digital Logic and Computer Design | First Edition | By Pearson by Mano
3. A Hand Book of Methodology of Research – P. Rajammal and P. Devadoss, R. M. M. Vidya Press, 1976. 3. The Craft of Scientific Writing by Michael Alley, (Springer).
4. The Fundamentals of Computer Organization, Raja Rao, Scitech
5. Silberschatz, "Operating system", Wiley Pub.
6. Courter G. and Marquis A., "MS-Office 2000 – No Experience Required", BBB Publications.



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**SRI SATYA SAI UNIVERSITY OF TECHNOLOGY &
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Date: 05/04/21

Minutes of Meeting of Board of Studies of Mathematics

The meeting of Board of Studies of Mathematics was held on 05.04.21 in the Board room of the University at 10:30 A.M. to discuss the following agenda:

• **Revision of the Syllabus of PhD Course Work of Mathematics**

The following members were present in the meeting:-

1. Dr. Syed Shahnawaz Ali SSSUTMS, Sehore - Chairman
2. Prof. Jainendra Jain GEC, Jagdalpur - External Member
3. Dr. Farooq Sheikh Govt. College for Women, Srinagar - External Member

The Chairman of the Board of Studies appreciates the faculty's efforts for the progress of the departmental activities. The agenda were discussed and resolved.

Discussion:- It was discussed that in the PhD program under the discipline of Mathematics, the syllabus of course work needs to be modified. In the syllabus of second semester there will be a paper based on scholar's research topic. Hence, the above mentioned changes have been incorporated in the syllabus. The maximum contents of the revised syllabus have been taken from the syllabus published by Madhya Pradesh Higher Education from time to time.

Resolution:- It has been resolved that the revised syllabus were discussed and recommended for implementation from the academic session 2021-22 for the PhD program under the discipline of Mathematics. Minutes of the meeting may be placed before the academic council for the approval. The Chairman thanks the members for the peaceful conduction of the meeting.

Signature of All members (Including Chairperson)

1. Dr. Syed Shahnawaz Ali
2. Prof. Jainendra Jain
3. Dr. Farooq Sheikh



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References:

1. H.L. Royden, Real Analysis, Macmillan (Indian Edition).
2. G.F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill.
3. I. V. Ahlfors, Complex Analysis, McGraw-Hill.
4. B V Ramana, Higher Engineering Mathematics, Tata McGraw-Hill Publishing Company Limited New Delhi.
5. Erwin Kreyszig, Advanced Engineering Mathematics 10th Edition, John Wiley and Son's Publishing Company (Indian Edition).



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MINUTES OF BOARD OF STUDIES MEETING

Name of Department: **Botany**

Minutes of Board of Studies Committee Meeting Held on Dated **07/04/2021**

The Board of Studies Committee Meeting was held in the room of Dean Cabin

At 2.00 pm on 07/04/2021 Following members were present,

1. Dr. Syed Shahab Ahmed - Chairman
2. Dr. K W Shah - External Member
3. Dr. Shobha Malviya - Member

The Chairman of Board of Studies Committee welcome and appreciated the efforts put up the faculty for Progress of the departmental activities. The following Agenda points were discussed and resolved.

Agenda :- The revision of the syllabus of Ph.d course work I & II Botany Science .

Discussion:-

discussed by the members of the Board of Studies, In which it is discussed that in programmes Ph.d Science changes are incorporated with the syllabus of first semester will changed subject portion would be revised and second semester will included as per concern of scholars. The maximum contents of the revised syllabus have been taken from the syllabus published by Madhya Pradesh Higher Education from time to time .



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Resolution:-

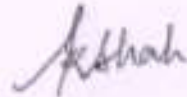
It is resolved that The revised syllabus were discussed and recommended for implementation from academic session 2021-22 for the Ph.d Botany students, admitted in session 2021-22 Minutes of the meeting may be placed before the academic council for approval.

Chairman thanks the members for peaceful conduction of meeting.

Signature of All members (Including Chairperson)



Dr. S. Shahab Ahmed



Dr. K. W. Shah



Dr. Shobha Mahiys



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SUBJECT SPECIALIZATION-I

SUBJECT: Botany

UNIT-I

Research in Biology, Biological problems and assumption, Search of research problems, Reference and literature search, Records and presentation of data, Biological literature, Technical papers, Abstracts, Reprints and other literature. Rules for maintaining the Biosafety in the laboratory.

UNIT-II

Principle and Application: Microscope, Incubator, Hot Air Oven Laminar flow, Soxhlet, Spectrophotometer, Colorimeter, pH meter, B.O.D., Centrifuge, Electrophoresis, Microtome, Electronic balance, Chromatography, Cryotomy, staining microphotography.

UNIT-III

Field survey, Plant Collection, and Identification, Key Preparation. Conservation techniques for Plant material. Biochemical and phytochemical Techniques, Soil and Water analysis. Plant Anatomy and Plant Physiology: Apical meristem (Shoot and Root): Structural organisation, Tunica-carpus theory, Quiescent centre concept and Promeristem concept. Plant cell wall: Ultra structure and organization Leaf Anatomy: Stomatal - types and distribution, dorsiventral and isobilateral. Stem and Root Anatomy : Primary and secondary structure of monocot and dicot. Xylem: Tracheids and Vessels. Heart and sapwood. Phloem : Ultra structure and function. Anomalous growth: Bignonia and Aristolochiasp.

UNIT-IV

Biostatistics: Mean, Median, Mode, Histogram, Frequency curve, Frequency Polygons, standard Deviation, and Standard Error, Normal & Binomial Distribution, Test of Significant Based on large and Small sample (t-test, Chi-Square test,) ANOVA Basics of correlation and regression analysis.

UNIT-V

Computer Application: Basic Idea of computer, (MS word, power point, excel. Bioinformatics: definition, role and limitation, Biological Data type. Classification of biological data base sequence data base, Gene bank Swiss-prot. Secondary nucleotide and protein sequence data base, specialized data base; KEGG, ENZYME.

References:

1. A Dictionary of Ecology by Michael Allaby
2. Encyclopedia of Evolution by Stanley Rice, Massimo Pigliucci (Introduction by)
3. Desk Encyclopedia of Microbiology by Moselio Schaechter (Editor)
4. The Penguin Atlas of Endangered Species by Richard MacKay



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5. Fundamentals of Light Microscopy and Electronic Imaging By Douglas B. Murphy
6. Introduction to Optical Microscopy By Jerome C. Mertz
7. Basic Methods in Microscopy: Protocols and Concepts from Cells: A Laboratory Manual. By David L. Spector and Robert D. Goldman
8. Introduction to Light Microscopy. By H. S. M. Bradbury and Brian Bracegirdle
9. The Organic Constituents of Higher Plants by Trevor Robinson
10. Phytochemical Methods A Guide to Modern Techniques of Plant Analysis by Natural Products By Raphael Ikan
11. Selected Topics in the Chemistry of Natural Products by Raphael Ikan
12. Naturally Occurring Glycosides By Raphael Ikan
13. An Introduction to Medical Statistics" by Martin Bland
14. Mathematics and Statistics for the Biosciences" by G Eason
15. Design and Analysis of Experiments" by Douglas C Montgomery
16. Categorical Data Analysis" by A Agresti
17. Biostatistics For Dummies" by John Pezzullo
18. Techniques in plant sciences , biostatistics and bioinformatics by Dr. Alok Kumar Shrivastava



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MINUTES OF BOARD OF STUDIES MEETING

Name of Department: **Biotechnology**

Minutes of Board of Studies Committee Meeting Held on Dated **09/04/2021**

The Board of Studies Committee Meeting was held in the room of Dean Cabin

At 11.00 am on 09/04/2021 Following members were present,

1. Dr. Syed Shahab Ahmed - Chairman
2. Dr. Mohit Arya - External Member
3. Dr. Shobha Malviya - Member

The Chairman of Board of Studies Committee welcome and appreciated the efforts put up the faculty for Progress of the departmental activities. The following Agenda points were discussed and resolved.

Agenda :- The revision of the syllabus of Ph.d course work I & II Biotechnology Science .

Discussion:-

discussed by the members of the Board of Studies. In which it is discussed that in programmes Ph.d Science changes are incorporated with the syllabus of first semester will changed subject portion would be revised and second semester will included as per concern of scholars. The maximum contents of the revised syllabus have been taken from the syllabus published by Madhya Pradesh Higher Education from time to time .




RES. _____
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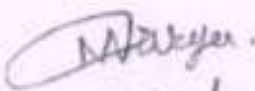
Resolution:-

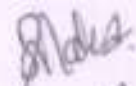
It is resolved that The revised syllabus were discussed and recommended for implementation from academic session 2021-22 for the Ph.d Biotechnology students. admitted in session 2021-22 Minutes of the meeting may be placed before the academic council for approval.

Chairman thanks the members for peaceful conduction of meeting.

Signature of All members (Including Chairperson)


Dr. S. Shahab Ahmed


Dr. Mohit Arya


Dr. Shobha Mahiye





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SUBJECT SPECIALIZATION-I
SUBJECT: BIOTECHNOLOGY

UNIT –I

CHROMATOGRAPHY TECHNIQUES : Chromatographically methods of Protein Purification. Primary structure determination of proteins; sequencing and detection of sequenced proteins. Ion exchange chromatography, hydrophobic interaction and reverse phase chromatography, affinity chromatography, gas chromatography, high performance liquid chromatography, liquid chromatography.

UNIT –II

Molecular biology and spectroscopy techniques: Comat assay; real time PCR; RAPD, RFLP, ARDRA and fluorescence in situ hybridization techniques. Atomic absorption spectroscopy, Infrared spectroscopy, nuclear magnetic resonance spectroscopy, mass spectroscopy.

UNIT –III

Electrophoretic and centrifugation techniques: SDS and native PAGE, Agrose gel Electrophoresis, isoelectric focusing and two-dimensional Electrophoresis, proteome analysis, differential and density gradient centrifugation. Analytical ultracentrifugation, separation of DNA/RNA using ultracentrifugation technique, determination of molecular weight and sedimentation coefficient.

UNIT-IV

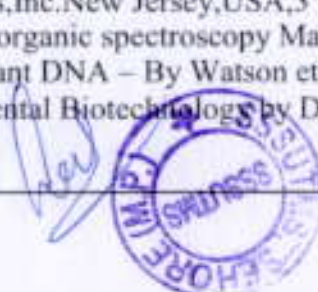
Molecular Biochemistry: production of amino acid, insulin, antibiotics, and protease enzyme. Isolation, screening and maintenance of industrially important microbes. Strain improvement for increased yield and other desirable characteristics. Basic concept of fermentation, its type and application fermentation. Bioreactor design information and types.

UNIT-V

Bioremediation: Types of Bioremediation, reaction in Bioremediation, factor affecting Bioremediation. Biopolymer production and bio plastic. Bio-fertilizers, bio-pesticides, biosensors, vermicomposting Degradation of Xenobiotics in environment.

REFERENCES:

1. Ricochon G G. Ricochon CP, Girardin M, Muniglia L, journal of chromatography B.2011;879:1529-1536.
2. Lloyed R S, Joseph J K, John W D, Introduction to modern liquid chromatography, A John Wiley & sons, Inc. New Jersey, USA, 3rd Ed. (2010).
3. V. Kreamp organic spectroscopy Macmillan Press Ltd.
4. Recombinant DNA – By Watson et al.
5. Environmental Biotechnology by Dr. Hans soachim jording, Prof. Dr. Joseph Winter.



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MINUTES OF BOARD OF STUDIES MEETING

Name of Department: **zoology**

Minutes of Board of Studies Committee Meeting Held on Dated **07/04/2021**

The Board of Studies Committee Meeting was held in the room of Dean Cabin at 2.00 pm on 07/04/2021

Following members were present,

1. Dr. Syed Shahab Ahmed - Chairman
2. Prof. Mohit Arya - External Member
3. Dr. Shobha Malviya - Member

The Chairman of Board of Studies Committee welcome and appreciated the efforts put up the faculty for Progress of the departmental activities. The following Agenda points were discussed and resolved.

Agenda :- The revision of the syllabus of Ph.d course work I & II Zoology Science .

Discussion:-

Discussed by the members of the Board of Studies that in programmes Ph.D Zoology Science changes are incorporated with the syllabus of first semester will changed subject portion would be revised and second semester will included as per concern of scholars. The maximum contents of the revised syllabus have been taken from the syllabus published by Madhya Pradesh Higher Education from time to time




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Resolution:-

It is resolved that The revised syllabus were discussed and recommended for implementation from academic session 2021-22 for the Ph.d Zoology students. admitted in session 2021-22 Minutes of the meeting may be placed before the academic council for approval

Chairman thanks the members for peaceful conduction of meeting.

Signature of All members (Including Chairperson)

- ① Mohit Arya.
- ② Dr Shobha Malys
- ③ Dr Syed Shahab Ahmed 




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Sri Satya Sai University of Technology and Medical Sciences

Subject Specialization-I

Subject (Zoology)

Unit I: Evolution and Systematics

- (i) Origin of life, History of evolutionary thought. Lamarck and his works, Darwin and his works
- (ii) Sources and nature of organic variation. Natural selection, Isolation. Concept of species and sub-species.
- (iii) Principles of classification, zoological nomenclature and international code.

Unit II : BASIC ZOOLOGY

- (i) Outline classification of Non-chordate chordates upto orders.
- (ii) Cell Biology
- (iii) Embryology and Developmental Biology (Chick only)

Unit III : APPLIED ZOOLOGY

- (i) Applied Zoology: Sericulture, Apiculture, Poultry and animal husbandry
- (ii) Human Diseases: Cancer, Protozoan diseases, Helminths diseases, Immunity, Vaccination and AIDS

Unit IV : ADVANCE GENETICS - I

- (i) Prenatal diagnosis and genetic screening
- (ii) Genetic counseling
- (iii) Human gene therapy
- (iv) Transgenic animals and their applications
- (v) Human Genome Project

Unit V : ADVANCE GENETICS - II

- (i) Methods of DNA analysis and diagnostics
- (ii) Pharmaceutical product of DNA technology
- (iii) Gene cloning
- (iv) DNA finger printing



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Minutes OF BOARD OF STUDIES MEETING

Name of Department: MICROBIOLOGY

Minutes of Board of Studies Committee Meeting Held on Dates 07/04/2021,

The Board of Studies Committee Meeting was held in the room of Department of SCIENCE at 11:00 AM. On 07/04/2021, Following members were present.

1. Dr. Shobha Malviya - Chairman
2. Dr. Ragini Gothwal - External Member
3. DR. Syed Shahab Ahmed - Member

The Chairman of Board of Studies Committee welcomes and appreciated the efforts put up the faculty for Progress of the departmental activities. The following Agenda points were discussed and resolved.

Agenda 1. The revision of the syllabus of Ph.D course work I & II Microbiology.

Discussion:-discussed by the members of the Board of Studies that in programmes Ph.D Microbiology some changes are incorporated with the syllabus.

Resolution:-

It is resolved that The revised syllabus were discussed and recommended for implementation from academic session 2021-22 for the Ph.D Microbiology students admitted in session 2021-22 Minutes of the meeting may be placed before the academic council for approval. Chairman thanks the members for peaceful conduction of meeting.

Chairman thanks the members for peaceful conduction of meeting.

Signature of All members (Including Chairperson)

1. Dr. Shobha Malviya - Chairman
2. Dr. Ragini Gothwal - External Member
3. DR. Syed Shahab Ahmed - Member

Dr. Shobha Malviya

Dr. S. Shahab Ahmed

Dr. Ragini Gothwal



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Medical Sciences Sector (M.P.)

Sri Satya Sai University of Technology and Medical Sciences

Subject Specialization-1

Subject (Microbiology)

UNIT 1: General Microbiology, Taxonomy and Diversity

History of Microbiology, Microbial Evolution, Classification Of Microorganisms, Bergey's Manual of Systematic Bacteriology, Cell Architecture of microorganisms Growth of microorganism, Microbial Diversity. Microbial World, Concepts and Scope, Classifying and Naming Microorganisms, ICNB Rules, Major Characteristics used to Classify Microorganisms, Importance and Conservation of Microbial Diversity, Metagenomics, In situ Conservation and Ex situ Conservation, Role of Culture collection centers in conservation.

UNIT 2: Microbial Physiology and Genetics

Microbial Energetics, Microbial enzymes, Metabolism of Carbohydrate, Alternate pathways of Carbohydrate Metabolism, Gluconeogenesis, Utilization of sugars other than glucose, Lipid metabolism, Nitrogen metabolism, Nucleic acid metabolism, Photosynthetic bacteria, Autotrophic Mechanisms in bacteria, Microbial Stress Responses to different conditions.

Generalized reproductive cycles of microbes: Viruses, Bacteria, Neurospora, Saccharomyces, Chlamydomonas and Acetabularia. **Viral Genetics:** Phage Phenotypes, Phenotypic Mixing, Bacterial Genetics: Bacterial

UNIT 3: Agricultural Microbiology

Introduction to Agricultural Microbiology, Plant pathology, Diagnosis of plant diseases, Parasitism and disease development, Entry of pathogens to the host, Effect on physiology of host, Plant disease epidemiology, Environment and Plant diseases, Defense Mechanism of Plant Disease, Plant Diseases and their management, Host pathogen interaction, Biofertilizer, PGPR, Biopesticides.

UNIT 4: Industrial Microbiology Concepts and Scope of industrial Microbiology, Fermentation, Industrially important microorganisms, strain improvement and preservation, Media for industrial fermentation, sterilization, upstream processing, downstream processing, Industrial production of energy fuels (solvents), organic acids, enzymes (amino) acids), food additives, Health care products (antibiotics,



REC-100
Sri Satya Sai University of Technology
& Medical Sciences Sehor (M.P.)

Minutes OF BOARD OF STUDIES MEETING

Name of Department: Chemistry

Minutes of Board of Studies Committee Meeting Held on Dates **03/04 /2021**

The Board of Studies Committee Meeting was held in the room of Department of Chemistry - at 11:00 AM. On **03/04/2021**, Following members were present.

- | | | |
|------------------------|-----------------|-----------------|
| 1. Dr.Pushendra Sharma | SSSUTMS,Sehore | Chairman |
| 2. Dr. Neelu Jain | SSSUTMS, Sehore | Internal Member |
| 3. DR. Sulbha Amlathe | B.U Bhopal | External Member |

The Chairman of Board of Studies Committee welcomes and appreciated the efforts put up the faculty for Progress of the departmental activities. The following Agenda points were discussed and resolved.

Agenda 1. The revision of the syllabus of PhD course work I & II chemistry.

Discussion:-- discussed by the members of the Board of Studies. In which it is discussed that in programs PhD Chemistry changes are incorporated with the syllabus of first semester will changed subject portion would be replaced on the place of " research methodology and First semester will included the topic Unit 1 Atomic and molecular Structure, Unit 2 Reaction Mechanism Of Transition Metal Complexes, Unit 3 Polymers and Green Chemistry , Unit 4 Techniques of Quantitative Analysis of Organic And Inorganic Compounds. Unit 5 Stereochemistry and Bonding in Main Group Compounds. The syllabus of subject specialization II would be concern according to research scholar topic. The maximum contents of the revised syllabus have been taken from the syllabus published by Madhya Pradesh Higher Education from time to time. The syllabus of subject specialization II would be concern according to research scholar topic.



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SUBJECT SPECIALIZATION-I
SUBJECT: CHEMISTRY

UNIT-I

Atomic and Molecular Structure: Molecular orbit of diatomic molecules, Equation for atomic and molecular orbitals, Energy level diagrams of diatomic, Pi-molecular orbital of benzene and aromatically, crystal field theory and the energy level diagrams for transition metal ions and their magnetic properties.

UNIT-II

Reaction Mechanism of Transition Metal Complexes - I: Energy Profile of a reaction, reactivity of metal complex, inert and labile complexes, Kinetic application of valence bond and crystal field theories. Kinetics of octahedral substitution, acid hydrolysis, factors affecting acid hydrolysis, base hydrolysis, conjugate base mechanism, direct and indirect evidences in favour of conjugate mechanism, anion reactions, reactions without metal ligand bond cleavage. Substitution reaction in square planer complexes, the trans effect, Mechanism of substitution reactions.

UNIT-III

Polymers and Green Chemistry: Introduction, classification, functionality, mechanisms, types of polymerization, Plastics; types of plastics, rubbers (elastomers), biopolymers/natural polymers, conducting polymers.

Green Chemistry: Introduction, principle and significance, industrial application super critical fluids as a solvent, Example-super critical CO₂, Bio catalysis and concept of carbon credits.

UNIT-IV

Techniques of Quantitative And Qualitative Analysis of Organic And Inorganic Compounds: Theoretical bases, Audiometry Alkalimetry, Iodometry, redox titration, precipitation & complexometry, gravimetry, miscellaneous methods.

UNIT-V

Stereochemistry and Bonding in Main Group Compounds : Valence shell electron pair repulsion (VSEPR) theory and its applications, Walsh diagram (triatomic and penta-atomic molecules), d_π-p_π bond, Bent rule and energetic of hybridization, some simple reactions of covalently bonded molecules such as Atomic inversion, Berry pseudo rotation, Nucleophile displacement, free radical mechanisms.

REFERENCES:

1. Advanced Inorganic Chemistry, F. A. Cotton and Wilkinson, John Wiley.
2. Inorganic Electronic Spectroscopy, A.B. P. Lever, Elsevier.
3. Modern Methods of organic synthesis, William Carruthers and Iain Coldham, Cambridge University Press, Fourth Ed. 2004.
4. Experiments and Techniques in organic chemistry, D. Casto, C Johnson and M. Miller, Prentice-Hall.
5. Inorganic Chemistry G.L. Misseler and D. A. Tarr Pearson Education, 2009..



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(Minutes of the Board of Studies Committee Meeting)

School Of Engineering

Department of Computer Science

Board of Studies Meeting of Computer Science Department was conducted on 25.02.2021 at 1.30 PM, Following members were present.

Dr. Neeraj sharma	SSSUTMS	Chairman
Dr. Rajeev Pandey	UIT RGPV, Bhopal	External Member
Dr. Divakar Singh	Govt UTI BU Bhopal.	External Member
Mr Ankit Joshi	SSSUTMS	Member
Mr. Abhishek Kuroliya	SSSUTMS	Member

Minutes of Meeting:

The Chairman of BOS opened the meeting by welcoming and introducing the external members, to the internal and thanked them for accepting to become the member of the Board of Studies.

Agenda:

The revision of the syllabus of programs Ph.D (Computer Science).

Discussion:

Revision of the syllabus of the programs Ph.D (Computer Science) is discussed by the members of the Board of Studies. In which it is discussed that in the syllabus of first semester of Ph.D (Computer Science) will changed. The maximum contents of the revised syllabus have been taken from the advance technology and First semester will included the topic Unit 1 Basics of Computer and Research, Unit 2 Computer organization, Unit 3 Using Internet for Research, Unit 4 Data processing tools & techniques for Research and Unit 5 Research Related Software's .

Resolution:-

After review of the revised syllabus, the Board of Studies members discussed and finalized the revision made in the syllabus with the following suggestions.

- 1) It is resolved that The revised syllabus were discussed and recommended for implementation from academic session 2021-22 for the Ph.D. (Computer Science) students, admitted in session 2021-22.



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SUBJECT SPECIALIZATION-I
SUBJECT: COMPUTER SCIENCE

UNIT-I

Basics of Computer and Research: Brief history of computers, Generation of Computers, Characteristics of Computers, Computer memory, Basic computer organization; System software, Application software, introduction to operating system, single user, multi-user, multi-tasking single tasking, application of computer for Research, MS-windows, Linux.

UNIT-II

Computer organization: Introduction of hardware & software of computers, Memory organization: Memory Maps, Memory Hierarchy, Cache Memory -Organization and mappings. Associative memory, Virtual memory, Memory Management Hardware.

UNIT-III

Computer Network for Research: Computer Network, Type of Computer Network, LAN, MAN , WAN, Wireless Network, Internet, Intranet, Extranet, Website. Internet and its application: E-mail, WWW, Web browsing, Research tools for better computing Internet, Use of Network in Research.

UNIT-IV

Data processing tools & techniques for Research: Use of word processing, Research publishes tool- MS-Word, Graphics tool- MS-Excel, spreadsheet, MS-Power Point: Creating presentations and adding effects and database software. Plotting of graphs.

UNIT-V

Data Analysis and database Software's: Data analysis software-SPSS: Definition, objectives and features, data analysis using SPSS: Data entry creating variables, switching to data labels, MAT Lab, , PsiLAB or free ware tools. Introduction of DBMS Concept, RDMBS, Tool for RDBMS.

References:

1. Fundamental of Computer By Pradeep K. Sinha.
2. Data Base System Concepts By Henry F. Korth ,S. Sudarshan.
3. A Hand Book of Methodology of Research – P. Rajammal and P. Devadoss, R. M. M. Vidya Press, 1976. 3. The Craft of Scientific Writing by Michael Alley, (Springer).
4. Tanenbaum A. S ,”Computer Networks “Pearson Education.
5. Silberschatz ,”Operating system”, Willey Pub
6. Courter G. and Marquis A. ,”MS-Office 2000 – No Experience Required”, BPB Publications.



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MINUTES OF BOARD OF STUDIES MEETING

Name of Department: **Physics**

Minutes of Board of Studies Committee Meeting Held on Dates **08/04/2021**

The Board on **08/04/2021**, Following members were present.

- | | | |
|---------------------------|--------------------------------------|-----------------|
| 1. Dr Geeta Khoobchandani | SSSUTMS, Sehore | Chairman |
| 2. Dr. Sanjay Rathore | SSSUTMS, Sehore | Internal Member |
| 3. Dr Anup kumar Singh | Govt. Girl's College, Sehore. | External Member |
| 4. Dr Arun Gautam | Chandra Shekhar Azad College, Sehore | External Member |

The Chairman of Board of Studies Committee welcomes and appreciated the efforts put up the faculty for Progress of the departmental activities. The following Agenda points were discussed and resolved.

Agenda:- The revision of the syllabus of PhD course work I & II Physics

Discussion: -- discussed by the members of the Board of Studies in which it is discussed that in programme PhD Physics some changes should be incorporated in the syllabus of first and second semester.

At present in I semester, first paper is of "Research methodology" and second paper is of Subject Specialization and in II semester, first paper is of "Review of Literature" and second is of Subject Specialization.

Now it is discussed that "Review of Literature" should be merged in I paper of first semester i.e. "Research methodology". Second paper of I semester will be of Subject Specialization..

And in II Semester there will be only one paper which will concern with Scholar Topic.



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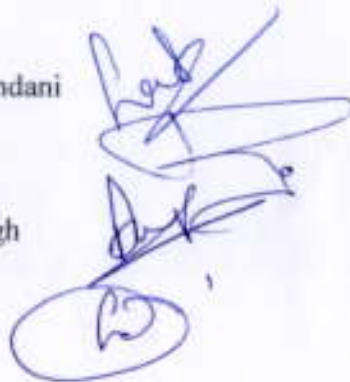
Resolution:-

It is resolved that the revised syllabus was discussed and recommended for implementation from academic session 2021-22 for the PhD Physics students admitted in session 2021-22. Minutes of the meeting may be placed before the academic council for approval.

Chairman thanks the members for peaceful conduction of meeting.

Signature of All members (Including Chairperson)

1. Dr Geeta Khoobchandani
2. Dr. Sanjay Rathore
3. Dr Anup kumar Singh
4. Dr Arun Gautam




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SUBJECT SPECIALIZATION-I

SUBJECT: PHYSICS

UNIT-I

QUANTUM MECHANICS

One dimensional problems: potential wells, steps and barriers. Harmonic oscillator, Hydrogen Atom, Spherically symmetric potentials: Bound States and scattering. Partial wave method, the Born approximation. Time-independent and Time-dependent perturbation theory. WKB approximation. Symmetry in Quantum Mechanics, Identical particles and spin.

UNIT-II

CLASSICAL MECHANICS

Newton's Laws and their meaning, simple applications conservation laws. Principle of virtual work and D'Alembert's principle. Central forces, Conservation of energy and angular momentum. Kepler problem, planetary orbits. Canonical Equation, Hamilton's equations, Canonical transformations. Rigid body dynamics. Euler's theorem. Moment of Inertia-calculations and theorems.

UNIT-III

STATISTICAL MECHANICS

Maxwell-Boltzmann gas velocity and speed distribution. Maxwell-Boltzmann, Bose-Einstein, Fermi-Dirac gases. Thermodynamics of Black body radiation, Stefan-Boltzmann law, Wien's displacement law. Specific heat of solids (Einstein and Debye models). Ideal Fermi System: Thermodynamic behavior of an ideal Fermi gas, degenerate Fermi gas, Fermi energy and mean energy, Fermi temperature.

UNIT-IV

ELECTRODYNAMICS

Electrostatics: Coloumb's law, Gauss's law, Electrostatic potential energy Poisson and Laplace's equations. Boundary value problems.

Magnetostatics: Biot Savart's law, Ampere's law, Motion of a charged particle in uniform, static, electric, magnetic and combined fields Time varying fields, Faraday's law, Maxwell's displacement current, Maxwell's equations, pointing's theorem. Wave equations, Electromagnetic plane waves, Linear, circular and elliptic polarization.

UNIT-V

MATHEMATICAL PHYSICS

Cauchy Riemann conditions, Analytic function, Line Integrals, Cauchy Integral Formula, Solutions of Differentials Equation in series, Legendre, Bessel, Hermite, Leaguers functions and their generating functions, Fourier Transform, Matrix algebra, Vector analysis. Coordinate transformations. Tensors- Notations and Conservations, Contra variant tensors, Rank of the tensors, Properties of the Tensors.

References:



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Sri Satya Sai University of Technology & Medical Sciences, Sehore

7. Quantum Mechanics: L.I. Schiff (McGraw Hill)
8. Quantum Mechanics: A.S. Davydov (Pergamon)
9. Quantum Mechanics: Cohen-Tannoudji et al. (Wiley VCH)
10. Classical Mechanics – Rana – Joag. TMH
11. Mathematical Methods of Classical Mechanics – V. I. Arnold, Springer.
12. Fundamentals of Statistical and Thermal Physics, F. Reif (International Student Ed.) McGraw Hill.
13. Statistical Mechanics, K. Huang, John Wiley & Sons, 2nd Ed.
14. Statistical Mechanics, R. K. Pathria, (Pergamon Press).
15. Fundamentals of Statistical Mechanics, B. B. Laud, (New Age International Edition).
16. J. D. Jackson - Classical Electrodynamics
17. D. J. Griffiths – Introduction to Electrodynamics
18. J. Complex Analysis by Churchil
19. Mathematical Methods for Physicist by Arfken and Weber
20. Finite dimensional Vector Spaces, P. Halmos
21. Mathematics of Classical and Quantum Physics by F. W. Byron and R. W. Fuller
22. R. Reitz, F. J. Milford, W. Christy – Foundations of Electromagnetic Theory



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