

From

Dr. Janeeshma E.
Head of the Department
Department Botany
MES KeVeeYam College, Valanchery

To

The Principal
MES KeVeeYam College, Valanchery

Sir,

Sub: Request for the Approval of Certificate Course

The Department Botany is planning to conduct a Certificate Course on **"A Practical approach on Biochemistry"** (KVM/CC/BOT/23-24/01) of 30 hours duration for the Third year Integrated M.Sc. Botany with Computational Biology students. So kindly grant permission for the same.

Thanking you

Yours faithfully,



Dr. Janeeshma E.

Place: Valanchery

Date: 14.11.2023



HOD
DEPT OF BOTANY
MES KEVEEYAM COLLEGE
VALANCHERY, 676552
MALAPPURAM DT.



Prof. (Dr.) VINOD KUMAR K.P.
PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, PIN 676552
MALAPPURAM

From

Dr. Janeeshma E.
Head of the Department
Department of Botany
MES KeVeeYam College, Valanchery

To

The Principal
MES KeVeeYam College, Valanchery

Sir,

Sub: Request for the Approval of Board of Studies for the Short Term Course

The following academicians may be included in the Board of Studies for the Short Term Course on **“A Practical approach on Biochemistry” (KVM/CC/BOT/23-24/01)** to be conducted by the Department of Botany with these members.

1. Dr. Archana E.R., Assistant Professor, Providence Womans College, Kozhikkode
2. Dr. Krishnaprabha K.S., Assistant Professor, MES KeVeeYam College, Valanchery
3. Dr. Janeeshma E., Assistant Professor, MES KeVeeYam College, Valanchery
4. Dr. Maya R, Assistant Professor, MES KeVeeYam College, Valanchery
5. Dr. Abdul Faisal P., Assistant Professor, MES KeVeeYam College, Valanchery
6. Preetha U., Assistant Professor, MES KeVeeYam College, Valanchery
7. Shefin B., Assistant Professor, MES KeVeeYam College, Valanchery
8. Rinshitha P.K., Assistant Professor, MES KeVeeYam College, Valanchery
9. Akshaya V.K., Assistant Professor, MES KeVeeYam College, Valanchery

Place: Valanchery

Date: 16.11.2023

Thanking you

[Signature]

Yours faithfully

Dr. Janeeshma E.

[Signature]
Prof. (Dr.) VINOD KUMAR.K.P
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MES KEVEEYAM COLLEGE VALANCHERY

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principal@meskeveeyamcollege.ac.in

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Proceedings of the Principal, MES KeVeeYam College, Valanchery

Order No. ACS/2023-2024/01 Dated 28/11/2023

Sub: Certificate Course – Reg.

Ref: 1. Request from the Head of the Department of Botany, Dated 16.11.2023.

2. Minutes of the Board of Studies Meeting for approval of the syllabus Dated 23.11.2023

ORDER

As per the reference cited (1), a request was received from the Head of the Department of Botany to start a certificate course on KVM/CC/BOT/23-24/01–A Practical approach on Biochemistry– Third year Integrated M.Sc. Botany with Computational Biology students. In the same letter, the Head of the Department has recommended a panel of academicians to be included in the Board of Studies.

The Board of Studies for the above course is constituted of the following members

1. Dr. Archana E.R., Assistant Professor, Providence Womans College, Kozhikkode
2. Dr. Krishnaprabha K.S., Assistant Professor, MES KeVeeYam College, Valanchery
3. Dr. Janeeshma E., Assistant Professor, MES KeVeeYam College, Valanchery
4. Dr. Maya R, Assistant Professor, MES KeVeeYam College, Valanchery
5. Dr. Abdul Faisal P., Assistant Professor, MES KeVeeYam College, Valanchery
6. Preetha U., Assistant Professor, MES KeVeeYam College, Valanchery
7. Shefin B., Assistant Professor, MES KeVeeYam College, Valanchery
8. Rinshitha P.K., Assistant Professor, MES KeVeeYam College, Valanchery
9. Akshaya V.K., Assistant Professor, MES KeVeeYam College, Valanchery

Sanction is hereby accorded to the Department of Botany for conducting the above-referred certificate course.

Order is issued accordingly.

Principal

Copy to:

1. HoD, Department of Botany, MES KeVeeYam College, Valanchery
2. The Principal, MES KeVeeYam College, Valanchery



K. Vinod

Prof. (Dr.) VINOD KUMAR.K.P
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MINUTES OF BOARD OF STUDIES MEETING

Venue: Department of Botany



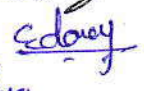




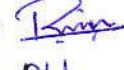

Date: 23/11/2023

Agenda: Approval of syllabus of the short-term course


Decisions

1. Discussions were done on the draft syllabus
2. Suggestions were made to include practical hrs.
3. Syllabus discussion- schedule total hours for complete.
4. Approval can be given to syllabus.

Members Present

1. Dr. Archana E.R, Assistant Professor, Providence Womans College, Kozhikkode 
2. Dr. Krishnaprabha K.S., Assistant Professor, MES KeVeeYam College, Valanchery 
3. Dr. Janeeshma E., Assistant Professor, MES KeVeeYam College, Valanchery 
4. Dr. Maya R, Assistant Professor, MES KeVeeYam College, Valanchery 
5. Dr. Abdul Faisal P., Assistant Professor, MES KeVeeYam College, Valanchery 
6. Preetha U., Assistant Professor, MES KeVeeYam College, Valanchery 
7. Shefin B., Assistant Professor, MES KeVeeYam College, Valanchery 
8. Rinshitha P.K., Assistant Professor, MES KeVeeYam College, Valanchery 
9. Akshaya V.K., Assistant Professor, MES KeVeeYam College, Valanchery 




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A Practical approach on Biochemistry

Course Description

This course provides an introduction to the chemical processes that occur within living organisms. It covers fundamental principles of biochemistry, including the structure and function of biomolecules (proteins, nucleic acids, lipids, and carbohydrates), enzymology, metabolism, and biochemical signalling pathways. The course will emphasize the molecular mechanisms underlying cellular functions, biological energy conversion, and molecular genetics. Laboratory sessions may include practical experiments on enzyme kinetics, protein analysis, and metabolic processes.

Course Objectives

1. To understand the chemical structure and functions of biomolecules such as proteins, nucleic acids, lipids, and carbohydrates.
2. To explain the principles of enzyme activity and regulation in biological systems.
3. To describe the major metabolic pathways, their regulation, and how cells generate and use energy.
4. To recognize the role of biochemistry in cellular signalling and molecular genetics.
5. To develop practical laboratory skills related to biochemical techniques and experiments.
6. To integrate knowledge of biochemistry into understanding health, disease, and biotechnology.

Course Outcomes

Upon successful completion of this course, students will be able to:

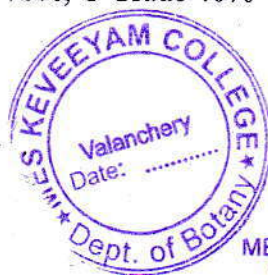
- Describe the structure and function of key biomolecules involved in cellular processes.
 - Apply knowledge of enzyme kinetics and regulation to explain biochemical reactions.
 - Illustrate the major metabolic pathways (glycolysis, citric acid cycle, oxidative phosphorylation) and understand their importance in energy metabolism.
 - Interpret biochemical data from laboratory experiments and understand their relevance to biochemical principles.
 - Analyze the biochemical basis of diseases and disorders related to metabolism, protein structure, and enzyme dysfunction.
6. Demonstrate laboratory skills in basic biochemical experiments, including the analysis of proteins, nucleic acids, and metabolic processes.
 7. Communicate biochemical concepts clearly in written and oral formats, applying critical thinking to complex biochemical question.

Scheme of Evaluation

- | | | |
|-------------------------|---|----------|
| ▪ Written examinations | – | 40 marks |
| ▪ Practical examination | – | 10 marks |
| ▪ Total | – | 50 marks |

A Grade – 80% and above; B Grade 60% - 70%; C Grade 40% - 59%; D Grade Below 40%

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Dr. Janeeshma K
HOD
DEPT OF BOTANY
MES KEVEEYAM COLLEGE
VALANCHERY 676552

Syllabus - A Practical Approach on Biochemistry

Total Duration of Certificate Course: 30 Hours (including practical)

Module – 1: Introduction to Biochemistry (2 hours)

- Theoretical Concepts:
 - Definition and scope of biochemistry
 - Importance of biochemistry in life sciences
 - Overview of biomolecules: Proteins, nucleic acids, lipids, and carbohydrates
 - Chemical bonds in biochemistry (covalent, ionic, hydrogen bonds)

Module – 2: Water and pH in Biochemistry (2 hours)

- Theoretical Concepts:
 - Water as a solvent and its unique properties
 - pH and buffers in biological systems
 - Concept of acids, bases, and pH scale
 - Henderson-Hasselbalch equation and buffer systems

Module – 3: Enzyme Kinetics and Mechanisms (5 hours)

- Theoretical Concepts:
 - Introduction to enzymes as biological catalysts
 - Mechanism of enzyme action
 - Michaelis-Menten equation and enzyme kinetics
 - Factors affecting enzyme activity (temperature, pH, concentration)
 - Enzyme inhibition: competitive, non-competitive, and uncompetitive
- Practical:
 - Determining enzyme activity using spectrophotometry (e.g., measuring the effect of substrate concentration on enzyme activity)
 - Calculating Michaelis-Menten constants

Module – 4: Carbohydrates, proteins and Lipids: Structure and Function (7 hours)

- Theoretical Concepts:
 - Structure and classification of carbohydrates (monosaccharides, disaccharides, polysaccharides)
 - Glycogen metabolism, glycolysis, and gluconeogenesis
 - Regulation of blood sugar levels
 - Amino acids and peptide bonds
 - Protein structure: Primary, secondary, tertiary, and quaternary
 - Denaturation and renaturation of proteins

- Enzyme structure and function
- Protein folding and chaperones
- Practical:
 - Tests for carbohydrates: Benedict's test (reducing sugars), Iodine test (starch)
 - Demonstration of glycolysis and fermentation in yeast
 - Extraction of lipids from biological samples (e.g., egg yolk)
 - Thin-layer chromatography (TLC) for lipid separation
 - Preparation and observation of protein denaturation (e.g., heating egg white or using urea)

Module – 5: Nucleic Acids and Genetic Information (6 hours)

- Theoretical Concepts:
 - Structure of DNA and RNA
 - Central Dogma: DNA replication, transcription, and translation
 - Genetic code and protein synthesis
 - Types of RNA (mRNA, tRNA, rRNA)
 - DNA replication and repair mechanisms

Module – 6: Vitamins, Cofactors, and Coenzymes (3 hours)

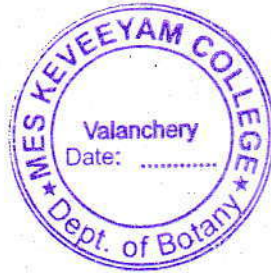
- Theoretical Concepts:
 - Overview of vitamins: Fat-soluble and water-soluble
 - Role of vitamins as cofactors and coenzymes in metabolic reactions
 - Enzyme activation and inhibition by vitamins
 - Deficiencies and their effects on health

Module – 7: Metabolism Overview; Final Review and Practical Applications (hours)

- Theoretical Concepts:
 - Overview of metabolism: Anabolism vs. catabolism
 - Cellular energy currency: ATP
 - Key metabolic pathways: Glycolysis, citric acid cycle, oxidative phosphorylation
 - Integration of metabolism and metabolic control mechanisms
 - Review of all major topics covered in the course
 - Real-life applications of biochemistry in medicine, nutrition, and biotechnology
 - Current trends and research in biochemistry
- Practical:
 - Group discussions on case studies (e.g., metabolic disorders, enzyme-linked diseases)

Evaluation and Assessment:

- Theory Exam (Multiple Choice/Short Answer Questions)
- Practical Report Submission
- Group Presentation on a Biochemical Topic

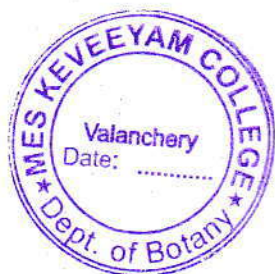


(Edaary)
Dr. Janeshma A

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Name:

Roll. No.....

MES KEVEEYAM COLLEGE VALANCHERY
SIXTH SEMESTER B.SC INTEGRATED BOTANY
CERTIFICATE COURSE IN BASIC APPROACH IN BIOCHEMISTRY, 2024

Time: 1: 30mins

Marks : 50

Part A: Short Answer Questions

(Answer all questions. Each question carries 2 marks.)

[2*5=10 Marks]

1. Define biochemistry and explain its importance in life sciences.
2. Describe the unique properties of water that make it a suitable solvent in biological systems.
3. What are peptide bonds? How do they form in proteins?
4. Write the Michaelis-Menten equation and explain its significance in enzyme kinetics.
5. Outline the steps involved in glycolysis.

Part B: Medium Answer Questions

(Answer any 4 questions. Each question carries 5 marks.)

[4*5=20 Marks]

6. Differentiate between covalent, ionic, and hydrogen bonds with examples relevant to biochemistry.
7. Discuss the role of pH and buffers in maintaining biological systems.
8. Explain the structural organization of proteins with a diagram illustrating primary, secondary, tertiary, and quaternary structures.
9. Describe the mechanism of enzyme inhibition and compare competitive and non-competitive inhibition.
10. Classify lipids and explain the function of each type in biological systems.

Part C: Long Answer Questions

(Answer any 2 questions. Each question carries 10 marks.)

[10*2=20 Marks]

11. Discuss the Central Dogma of Molecular Biology, detailing the processes of replication, transcription, and translation. Include the role of RNA in these processes.
12. Explain glycolysis, gluconeogenesis, and their regulation. How are these pathways integrated in carbohydrate metabolism?
13. Provide an overview of ATP generation through glycolysis, citric acid cycle, and oxidative phosphorylation. Explain the significance of ATP as a cellular energy currency.

Vinod

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Certificate course on A PRACTICAL APPROACH ON BIOCHEMISTRY



K. Vinod

Organized By Department of Botany

Prof. (Dr.) VINOD KUMAR.K.P
PRINCIPAL
M.E.S KEVEEYAM COLLEGE
VALANCHERY, PIN 676552
MALAPPURAM

Duration of Course : 30hrs
Last date of application: 28.11.2023
Classes start on : 29.11.2023

HoD
9048969923

Course coordinator
7902735127

ATTENDANCE DETAILS

Sl.No	NAME	29.11.23	30.11.23	01.12.2023	04.12.2023	05.12.2023	06.12.2023	07.12.2023	08.12.2023	11.12.2023	12.12.2023	13.12.2023	14.12.2023	15.12.2023	16.12.2023	19.12.2023
1	Fathima Rana	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
2	Jalva K V	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
3	higara	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
4	Mufeedha V K	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
5	Anupama K	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
6	Maara T.	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
7	Abhishek Nair R.	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
8	Deepak Baba N	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
9	Jasim Taleel PT	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
10	Siva Prakash	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
11	Asba Dilna Ameen	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
12	Fathima Nashath	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
13	Fathima Rishba	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
14	Salma P.	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
15	Shabana Shemra	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
16	Sneha K.P.	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
17	Thabiriyya T.	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
18	Iqas Ali T.K	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present
19	Muhammed Thajeeel V	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present	Present

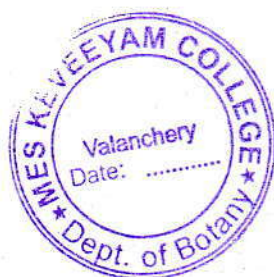
Prof. JOM VINOD KUMAR K.P.
 VES KUTNEYAM COLLEGE
 VILANCHERY, PIN 676552
 KOLLUPURAM

Time table for the short-term certificate course

Date	Day	Name of the faculty	Time
29.11.23	Wednesday	Rinshitha	8.30-9.30, 3.30-4.30
30.11.23	Thursday	Dr. Janeeshma E	8.30-9.30, 3.30-4.30
01.12.23	Friday	Preetha U	8.30-9.30, 3.30-4.30
04.12.23	Monday	Rinshitha	8.30-9.30, 3.30-4.30
05.12.23	Tuesday	Dr. Janeeshma E	8.30-9.30, 3.30-4.30
06.12.23	Wednesday	Rinshitha	8.30-9.30, 3.30-4.30
07.12.23	Thursday	Dr. Maya R	8.30-9.30, 3.30-4.30
08.12.23	Friday	Dr. Abdul Faisal	8.30-9.30, 3.30-4.30
11.12.23	Monday	Dr. Janeeshma E	8.30-9.30, 3.30-4.30
12.12.23	Tuesday	Rinshitha	8.30-9.30, 3.30-4.30
13.12.23	Wednesday	Akshaya V K	8.30-9.30, 3.30-4.30
14.12.23	Thursday	Dr. Abdul Faisal	8.30-9.30, 3.30-4.30
15.12.23	Friday	Dr. Janeeshma E	8.30-9.30, 3.30-4.30
18.12.23	Monday	Rinshitha	8.30-9.30, 3.30-4.30
19.12.23	Tuesday	Preetha U.	8.30-9.30, 3.30-4.30

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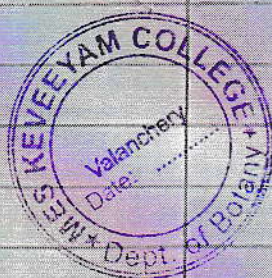
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Dr. Janeeshma E

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MALAPPURAM DT.

REGISTERED PARTICIPANTS

Sl. No.	PARTICIPANTS	MARKS OBTAINED (Out of 50)	SIGNATURE
	Fathima Rana	45	<u>Rana</u>
	Jalva KV	49	<u>M</u>
	Liyasa	50	<u>Liyasa</u>
	Melfeedha UK	44	<u>Melfeedha</u>
	Anupama K	49	<u>Anupama</u>
	Maiva T	42	<u>Maiva</u>
	Abhishbek Naim R.	46	<u>Abhishbek</u>
	Deepak Babu N.	41	<u>Deepak</u>
	Jasim Taleel PT	42	<u>Jasim</u>
	Siva Prakash	39	<u>Siva</u>
	Aisha Diba Ameer	48	<u>Aisha</u>
	Fathima Nushabha	41	<u>Fathima</u>
	Fathima Rinsba	50	<u>Rinsba</u>
	Salima P.	41	<u>Salima</u>
	Shabana Sherio	39	<u>Shabana</u>
	Sneha KP	35	<u>Sneha</u>
	Thabbiyya T.	42	<u>Thabbiyya</u>
	Ips Ali TK	40	<u>Ips Ali</u>
	Mubammed Thafseel V.	39	<u>Mubammed</u>

Kavind



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CERTIFICATES RECEIVED / LIST OF STUDENTS

WHO COMPLETED

Signature

Sl. No. Name of Student

1	Fathima Reena	
2	Jarva K.V	
3	Liyana	
4	Wifeedha U.K	
5	Anupama K.	
6	Marva T	
7	Abhishek Nair R	
8	Deepak Babu N	
9	Jasim Jaleel P.T	
10	Shiva Prakash	
11	Asha Delna Aneed	
12	Fathima Nuseetha	
13	Fathima Rameha	
14	Salima P	
15	Shahana Sherin	
16	Shreya K.P	
17	Thahannege P	
18	Yas Ali K.P.	
19	Muhammed Thefreel V	



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KVM-CC-23-24 /

Certificate

This is to certify that LIYANA has successfully completed the certificate course on

“ A PRACTICAL APPROACH ON BIOCHEMISTRY ” conducted by the

Department of BOTANY, MES Keveeyam College, Valanchery

during the academic year 2023-24.

Ms. Jameela. M. K

Co-ordinator

Course Facilitator

Prof. Dr. K. P. Vinod Kumar

Principal



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MES KEVEEYAM COLLEGE
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Prof. (Dr.) VINOD KUMAR.K.P
PRINCIPAL

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Certificate


This is to certify that Siva Prakash has successfully completed the certificate course on

“ A PRACTICAL APPROACH ON BIOCHEMISTRY ” conducted by the

Department of BOTANY, MES Keveeyam College, Valanchery

during the academic year 2023-24.


Ms. Jameela. M. K
Co-ordinator


Course Facilitator


Head of the Department

Prof. Dr. K. P. Vinod Kumar
Principal

Prof. (Dr.) VINOD KUMAR.K.P
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