ANNA UNIVERSITY, CHENNAI
AFFILIATED INSTITUTIONS
REGULATIONS 2017
B. TECH. BIOTECHNOLOGY
CHOICE BASED CREDIT SYSTEM

1. Program Objectives (POs)

The primary objective of the Bachelor of Industrial Biotechnology program is to prepare professionals with the skills required to work in the Biotechnology industry with particular emphasis on the engineering aspects of manufacturing and design.

They are trained to

1. Achieve successful professional and technical career.
2. Have a strong foundation in Basic Sciences, Mathematics, Medical Sciences, Bioinformatics and process engineering.
3. Have knowledge on the theory and practices in the field of Biotechnology, especially in the areas of Downstream processing, Medical biotechnology and Bioinformatics and allied areas.
4. Engross in life-long learning to keep themselves abreast of new developments.
5. Practice and inspire high ethical values and technical standards.

The Overall objective of the Program is to promote education and research in biotechnology and provide academic and professional excellence for immediate productivity in industrial, governmental, or clinical settings for an ultimate benefit of society and environment.

As a result of this program, the student will be able to:

1. Recall factual information on broad knowledge based proficiency in core themes, principles and components of Basic Sciences.
2. Create and develop strategies that reflect the interdisciplinary nature of science, regulation and enterprise in the biotechnology industry.
3. Define and solve problems using scientific methods in biotechnology and allied subjects.
4. Consider implications of biotechnology in societal, environmental and educational frameworks.
5. Access current information and literature in science and Prepare and present scientific data.
6. Demonstrate knowledge of biological processes from the molecular and cellular perspectives.
7. Approach and solve biological problems critically with scientific literacy in individual and group settings.
8. Able to understand, analyze and apply the process engineering concepts an incredibly wide diversity of applications including pharmaceutical development, crop and livestock improvement, diagnostic and therapeutic medicine, industrial processing, and bioremediation of contaminated environments.

BT8811 **PROJECT WORK** **L T P C**
0 0 20 10

OBJECTIVE:

- To objective of the project work is to make use of the knowledge gained by the student at various stages of the degree programme.

The students are assigned project work related to product / process development, solution to the technical problems in industry and current research at national and international level. The student is required to submit a report at the end of semester based on the findings. The evaluation is made as per the Regulations of University.

BT8001 **BIOPHYSICS** **L T P C**
3 0 0 3

OBJECTIVES:

To enable the students

- To gain structural knowledge of biological systems.
- To understand transport and dynamic properties of biological systems.

UNIT I MOLECULAR STRUCTURE OF BIOLOGICAL SYSTEMS 9

Intramolecular bonds – covalent – ionic and hydrogen bonds – biological structures –general features – water structure – hydration – interfacial phenomena and membranes – self assembly and molecular structure of membranes.

UNIT II CONFORMATION OF NUCLEIC ACIDS 9

Primary structure – the bases – sugars and the phosphodiester bonds- double helical structure – the a b and z forms – properties of circular DNA – topology – polymorphism and flexibility of DNA – structure of ribonucleic acids – hydration of nucleic acids.

UNIT III CONFORMATION OF PROTEINS 9

Conformation of the peptide bond – secondary structures – Ramachandran plots – use of potential functions – tertiary structure – folding – hydration of proteins – hydropathy index.

UNIT IV CELLULAR PERMEABILITY AND ION – TRANSPORT 9

Ionic conductivity – transport across ion channels – mechanism - ion pumps- proton transfer – nerve conduction – techniques of studying ion transport and models.

UNIT V ENERGETICS & DYNAMICS OF BIOLOGICAL SYSTEMS 9

Concepts in thermodynamics – force and motion – entropy and stability – analyses of fluxes – diffusion potential – basic properties of fluids and biomaterials – laminar and turbulent flows.

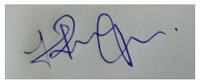
TOTAL: 45 PERIODS

OUTCOMES:

Upon completion of this course, students will be able:

- To analyze the various forces responsible for biological molecular structure.

Sl.No	Registration Number	Name	Project Guide	Project Group	Project Title
1	920417214038	Priyadharshini. V	Dr.Anant Achary	1	IN-SILICO AND IN-VITRO STUDIES ON ANTI-ANGIOGENIC EFFECT OF FUCOXANTHIN AND PHLOROTANNIN
2	920417214002	Anantha Valli.R	Dr.Anant Achary		
3	920417214016	A P Harini	Dr.Anant Achary		
4	920417214012	Divya dharsini	Dr.M.Vasanthi	2	NETWORK PHARMACOLOGY BAESD IDENTIFICATION OF KEY TARGETS FOR SUPPRESSION OF BREAST CANCER METASTASIS USING GUAVA:IN SILICO AND IN VITRO APPROACHES
5	920417214007	S. Dhaarani	Dr.M.Vasanthi		
6	920417214024	K.Malarvizhi	Dr.M.Vasanthi		
7	920417214041	SHILPHA SENAKA R	Dr.R.Shyam Kumar	3	DEVELOPMENT OF LICHEN BASED POLYMERIC COMPOSITES
8	920417214030	Ms.S.NAGAJOTHI	Dr.R.Shyam Kumar		
9	920417214006	V Deekshitha	Dr.R.Shyam Kumar		
10	920417214040	Roshini. S	Dr.K.Geetha	4	DEVELOPMENT AND VALIDATION OF CLINICAL DIAGNOSTIC FORM FOR CHRONIC RHINOSINUSITIS
11	920417214032	Nithyakalyani R	Dr.K.Geetha		
12	920417214037	J.Priya Dharshini	Dr.K.Geetha		
13	920417214013	Divya Lakshmi T.J	Dr.K.Geetha		
14	920417214008	S.Dhana Prabhaa	Dr.I.Ganesh Moorthy	5	Microwave assisted Biodiesel Production from Hevea brasiliensis seed oil using Heterogenous catalyst
15	920417214001	E.Abi Sherlin	Dr.I.Ganesh Moorthy		
16	920417214003	Ancy A	Dr.I.Ganesh Moorthy		
17	920417214050	S.VISHNU KARTHIK	Dr.S.Kartikumar	6	Development of Paper Based Smart Sensor to Quantify Metanil Yellow adultration in Food Items
18	920417214044	Sreenidhi	Dr.S.Kartikumar		
19	920417214026	Megana Harshini M	Dr.S.Karthikumar		
20	920417214004	Aravind S	Dr.S.Kartikumar	7	IOT Based Monitoring of Enzyme Production in Bioreactor
21	920417214009	Dhanu Prasad	Dr.S.Kartikumar		
22	920417214039	Ranjith.H	Dr.S.Kartikumar		
23	920417214051	Winnifer Jose	Dr.S.Mariamalraj	8	Extraction of Plant Based Biosurfactant and its application in Agriculture
24	920417214035	Pavithra	Dr.S.Mariamalraj		
25	920417214047	Swetha.A	Dr.S.Mariamalraj		
26	920417214036	Pooja n	Dr.S.Mariamalraj	9	SYNTHESIS OF STARCH BASED SILVER NANOCOMPOSITES AND ITS CHARACTERISATION
27	920417214042	Shivani. G. S	Dr.S.Mariamalraj		
28	920417214025	M.Malini	Dr.S.Mariamalraj		
29	920417214015	GOWSHIKA SRI R	Mr.S.Manibalan	10	Drug Repositioning, Invitro and Invivo studies to discover therapeutics against Parkinson Disease
30	920417214027	A.MONIKA	Mr.S.Manibalan		
31	920417214017	Indhumathi S	Mr.S.Manibalan		
32	920417214043	Shraddha D P	Dr.V.C.Padmanaban	11	KINETIC STUDIES ON THE MICRO BUBBLE BASEDOZONOLYTIC REMOVAL OF RESIDUAL ANTIBIOTICS FROMPHARMACEUTICAL EFFLUENTS
33	920417214031	R.Nelaa Shivani	Dr.V.C.Padmanaban		
34	920417214010	Dheepshika K	Dr.V.C.Padmanaban		
35	920417214021	Judy Joy Jemima K	Mrs.M.Soundaryalakshmi	12	Evaluation of Antidiabetic potential of Cocciniaindica through Insilico and Invitro Studies
36	920417214034	V.Nivethitha	Mrs.M.Soundaryalakshmi		
37	920417214701	Sornapreetha	Mrs.M.Soundaryalakshmi		
38	920417214018	R.Janani Devi	Dr.A.Ronaldo Anuf	13	EVALUATION OF METABOLITES FROM PAECILOMYCES Sp. FOR POTENTIAL USE AS BIOHERBICIDE
39	920417214045	R.SREENIDHI	Dr.A.Ronaldo Anuf		
40	920417214022	M.KANIMOZHI	Dr.A.Ronaldo Anuf		
41	920417214020	Jothimalar Thavamani	Dr.A.Ronaldo Anuf		
42	920417214049	Vijay Praveen Kumar.T	Ms.R.Amuthalakshmi	14	ISOLATION, EXTRACTION AND CHARACTERIZATION OF EXOPOLYSACCRIDES FROM LICHENS ASSOCIATED CYANOBIONTS
43	920417214005	Balaji N	Ms.R.Amuthalakshmi		
44	920417214028	L S MUKILAN	Ms.R.Amuthalakshmi		
45	920417214033	P. NIVETHA	Dr.D. Pradiba	15	Inhibitory potential of phytochemicals from *Cardiospermum halicacabum* and *Moringa olifera* against Matrix Metallo Proteinase - 9 : Insilico and Invitro studies
46	920417214014	J. Gowri	Dr.D. Pradiba		
47	920417214029	Muthulakshmi.P.G.	Dr.D. Pradiba		



Project co - ordinator

HoD/BT

EXTRACTION OF SAPONIN AND ITS APPLICATION AS DISPERSION AGENT

PROJECT REPORT

Submitted by

S. PAVITHRA (920417214035)

A. SWETHA (920417214047)

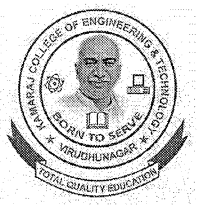
W. WINNIFER JOSE (920417214051)

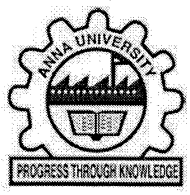
in partial fulfillment of the requirements for the degree of

BACHELOR OF TECHNOLOGY

IN

BIOTECHNOLOGY





DEPARTMENT OF BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY

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APRIL 2021

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BONAFIDE CERTIFICATE

Certified that the project report **"EXTRACTION OF SAPONIN AND ITS APPLICATION AS DISPERSION AGENT"** is the bonafide work of **"S. PAVITHRA (920417214035), A. SWETHA (920417214047) and W. WINNIFER JOSE (920417214051)"** who carried out the project under my supervision.

M. Vasanthi

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K. Jyothi 28/9/2021

INTERNAL EXAMINER

EXTERNAL EXAMINER

GROWTH KINETICS STUDY OF LICHEN ASSOCIATED CYANOBACTERIA IN DIFFERENT GROWTH MEDIUM

A PROJECT REPORT

Submitted by

BALAJI N (920417214005)

MUKILAN L S (920417214028)

VIJAY PRAVEEN KUMAR T (920417214049)

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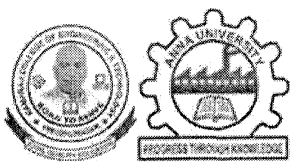

DEPARTMENT OF BIOTECHNOLOGY

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BONAFIDE CERTIFICATE

Certified that the project report "**GROWTH KINETICS STUDY OF LICHEN ASSOCIATED CYANOBACTERIA IN DIFFERENT GROWTH MEDIUM"** is the bonafide work of **"N BALAJI (920416214005), L S MUKILAN (920416214028), T VIJAY PRAVEEN KUMAR (920416214049)"** who carried out the work under my supervision.

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INTERNAL EXAMINER

EXTERNAL EXAMINER

DEAN 22/04/2021

(ACADEMIC COURSES)

DEAN 22/04/2021

(EXAMINATIONS)

PRINCIPAL 22/04/2021

EVALUATION OF ANTI-DIABETIC POTENTIAL OF *COCCINIA INDICA* THROUGH INSILICO STUDIES

A PROJECT REPORT

Submitted by

JUDY JOY JEMIMA K (920417214021)

NIVETHITHA V (920417214034)

SORNA PREETHA S (920417214701)

In partial fulfillment for the award of the degree of

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APRIL 2021

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Certified that the project report **"EVALUATION OF ANTI-DIABETIC POTENTIAL OF *COCCINIA INDICA* THROUGH INSILICO STUDIES"**, is the bonafide work of **"JUDY JOY JEMIMA K (920417214021), NIVETHITHA V (920417214034), SORNA PREETHA S (920417214701)"** who carried out the project under my supervision.

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28/4/2021

INTERNAL EXAMINER

EXTERNAL EXAMINER

NETWORK PHARMACOLOGY BASED IDENTIFICATION OF KEY TARGETS FOR SUPPRESSION OF BREAST CANCER METASTASIS USING GUAVA: *IN SILICO* AND *IN VITRO* APPROACHES

A PROJECT REPORT

Submitted by

S.DHAARANI **(920417214007)**

K.MALARVIZHI **(920417214024)**

G.DIVYA DHARSINI **(920417214012)**

in partial fulfillment of the requirements for the degree of

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BONAFIDE CERTIFICATE

Certified that this report titled **"NETWORK PHARMACOLOGY BASED IDENTIFICATION OF KEY TARGETS FOR SUPPRESSION OF BREAST CANCER METASTASIS USING GUAVA: *IN SILICO* AND *IN VITRO* APPROACHES"** is the bonafide work of **DHAARANI S (920417214007), MALARVIZHI K(920417214024)** and **DIVYA DHARSINI G (920417214012)** who carried out the project work under my supervision

M. Vasanthi

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K. Gunthy 28/9/2021

INTERNAL EXAMINER

EXTERNAL EXAMINER

IN-SILICO STUDIES ON ANTI-ANGIOGENIC EFFECT OF FUCOXANTHIN AND PHLOROTANNIN FROM MARINE BROWN ALGAE

A PROJECT REPORT

Submitted by

ANANTHA VALLI.R (920417214002)

HARINI.A.P (9201417214016)

PRIYADHARSHINI.V (920417214038)

in partial fulfillment for the award of the degree

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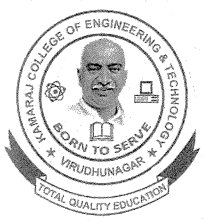

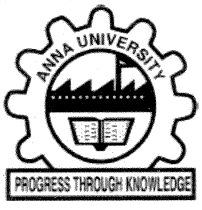

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APRIL 2021

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Certified that this project report for "***IN-SILICO* STUDIES ON ANTI-ANGIOGENIC EFFECT OF FUCOXANTHIN AND PHLOROTANNIN FROM MARINE BROWN ALGAE"** is the bonafide work of **"Anantha Valli.R (920417214002), Harini.A.P (920417214016), Priyadharshini.V (920417214038)"** who carried out the project work under my supervision.

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28/4/2021

INTERNAL EXAMINER

EXTERNAL EXAMINER

IoT BASED MONITORING OF ENZYME PRODUCTION IN BIOREACTOR

PROJECT REPORT

Submitted by

ARAVIND S (920417214004)

RANJITH H (920417214039)

DHANU PRASAD D (920417214009)

in partial fulfilment for the award of the degree of

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DEPARTMENT OF BIOTECHNOLOGY

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Certified that the project report "**IoT BASED MONITORING OF ENZYME PRODUCTION IN BIOREACTOR**" is the bonafide work of "**ARAVIND S (920417214004), RANJITH H (920417214039) & DHANU PRASAD D (920417214009)**" who carried out the project work under my supervision.

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INTERNAL EXAMINER

EXTERNAL EXAMINER

PHYSICAL CHARACTERIZATION OF LICHEN FOR FILLERS IN LOW DENSITY POLYMERIC FILMS

PROJECT REPORT

Submitted by

DEEKSHITHA V (920417214006)

NAGAJOTHI S (920417214030)

SHILPHA SENEKA R (920417214041)

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Certified that the project report "**PHYSICAL CHARACTERIZATION OF LICHEN FOR FILLERS IN LOW DENSITY POLYMERIC FILMS**" is the bonafide work of "**DEEKSHITHA V (920417214006), NAGAJOTHI S (920417214030), SHILPHA SENEKA R (920417214041)**" who carried out the project under my supervision

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28/4/2024

INTERNAL EXAMINER

EXTERNAL EXAMINER

KINETIC STUDIES ON THE NANO BUBBLE BASED OZONOLYTIC REMOVAL OF RESIDUAL ANTIBIOTICS FROM PHARMACEUTICAL EFFLUENTS

PROJECT REPORT

Submitted by

SHRADDHA D P (920417214043)

NELAA SHIVANI R (920417214031)

DHEEPSHIKA K (920417214010)

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APRIL 2021

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BONAFIDE CERTIFICATE

Certified that this project report titled **"KINETIC STUDIES ON NANOBUBBLE BASED OZONOLYTIC REMOVAL OF RESIDUAL ANTIBIOTICS FROM PHARMACEUTICAL EFFLUENTS"** is the bonafide work of **"SHRADDHA D.P. (920417214043), NELAA SHIVANI R. (920417214031), and DHEEPSHIKA K. (920417214010)"** who carried out the project work under my supervision.

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INTERNAL EXAMINER

EXTERNAL EXAMINER

DEVELOPMENT OF SMART SENSOR TO MONITOR METANIL YELLOW ADULTERATION IN FOOD ITEMS

PROJECT REPORT

Submitted by

MEGANAHARSHINI M (920417214026)

SREENIDHI K (920417214044)

S VISHNUKARTHIK (920417214050)

in partial fulfillment for the award of degree of

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APRIL 2021

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BONAFIDE CERTIFICATE

Certified that the project report **"DEVELOPMENT OF SMART SENSOR TO MONITOR METANIL YELLOW ADULTERATION IN FOOD ITEMS"** is the bonafide work of **"MEGANAHARSHINI M (920417214026), SREENIDHI K (920417214044), and S VISHNUKARTHIK (920417214050)"** who carried out the project work under my supervision.

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INTERNAL EXAMINER

EXTERNAL EXAMINER

EVALUATION OF SECONDARY METABOLITES FROM *Paecilomyces* sp. FOR POTENTIAL USE AS BIOHERBICIDE

PROJECT REPORT

Submitted by

JANANI DEVI R (920417214018)

JOTHIMALAR T (920417214020)

KANIMOZHI M (920417214022)

SREENIDHI R (920417214045)

in partial fulfillment of the requirements for the degree of

BACHELOR OF TECHNOLOGY

IN

BIOTECHNOLOGY

DEPARTMENT OF BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University, Chennai)

K. VELLAKULAM-625 701 (Near Virudhunagar)

APRIL 2021

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University, Chennai)

K. VELLAKULAM-625 701 (Near Virudhunagar)

BONAFIDE CERTIFICATE

Certified that the project report **"EVALUATION OF SECONDARY METABOLITES FROM *Paecilomyces* sp. FOR POTENTIAL USE AS BIOHERBICIDE"** is the bonafide work of **"JANANI DEVI R (920417214018), JOTHIMALAR T (920417214020), KANIMOZHI M (920417214022), SREENIDHI R (920417214045)"** who carried out the project under my supervision.

SIGNATURE
Dr. M. VASANTHI
HEAD OF THE DEPARTMENT
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SIGNATURE
Dr.A. RONALDO ANUF
SUPERVISOR
Assistant Professor,
Department of Biotechnology
Kamaraj College of Engg & Tech,
K. Vellakulam, Madurai

INTERNAL EXAMINER

EXTERNAL EXAMINER

OPTIMIZATION OF BIOSYNTHESIS OF SILVER NANOPARTICLES AND ITS CHARACTERIZATION

PROJECT REPORT

Submitted by

SHIVANI.G.S (920417214042)

MALINI.M (920417214025)

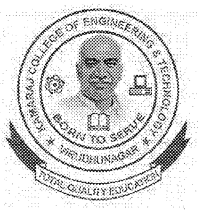
POOJA.N (920417214036)

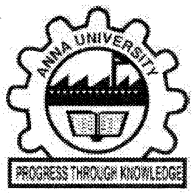
in partial fulfillment of the requirements for the degree of

BACHELOR OF TECHNOLOGY

IN

BIOTECHNOLOGY





DEPARTMENT OF BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY

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K. VELLAKULAM-625 701 (Near Virudhunagar)

APRIL 2021

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University, Chennai)

K.VELLAKULAM-625 701 (Near Virudhunagar)

BONAFIDE CERTIFICATE

Certified that the project report **"OPTIMIZATION OF BIOSYNTHESIS OF SILVER NANOPARTICLES AND ITS CHARACTERIZATION"**, is the bonafide work of **"SHIVANI.G.S (920417214042), MALINI.M (920417214025) & POOJA.N (920417214036)"** who carried out the project under my supervision

SIGNATURE
Dr. M. VASANTHI
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Department of Biotechnology
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K. Vellakulam, Madurai

SIGNATURE
Dr. S. MARIAAMALRAJ
SUPERVISOR
Assistant Professor,
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K. Vellakulam, Madurai

INTERNAL EXAMINER

EXTERNAL EXAMINER

DEVELOPMENT OF CLINICAL DIAGNOSTIC FORM FOR CHRONIC RHINOSINUSITIS

PROJECT REPORT

Submitted by

DIVYA LAKSHMI T J (920417214013)

NITHYA KALYANI R (920417214032)

PRIYA DHARSHINI J (920417214037)

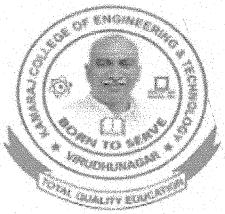
ROSHINI S (920417214040)

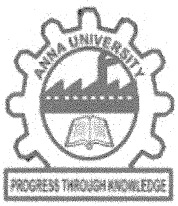
In partial fulfilment for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

BIOTECHNOLOGY





DEPARTMENT OF BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University, Chennai)

K. VELLAKULAM-625 701 (Near Virudhunagar)

APRIL 2021

BONAFIDE CERTIFICATE

Certified that this project report **"DEVELOPMENT OF CLINICAL DIAGNOSTIC FORM FOR CHRONIC RHINOSINUSITIS (CRS)"** is the bonafide work of **"T.J DIVYA LAKSHMI (920417214013), R. NITHYAKALYANI (920417214032), J.PRIYA DHARSHINI (920417214037) & S.ROSHINI (920417214040)"** who carried out the project work under my supervision.

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SUPERVISOR
Assistant Professor,
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K. Vellakulam, Madurai.

INTERNAL EXAMINER

EXTERNAL EXAMINER

RUBBER SEED OIL: A POTENTIAL SOURCE FOR BIODIESEL PRODUCTION

PROJECT REPORT

Submitted by

ABI SHERLIN E (920417214001)

ANCY A (920417214003)

DHANA PRABHAA S (920417214008)

in partial fulfillment of the requirements for the degree of

BACHELOR OF TECHNOLOGY

IN

BIOTECHNOLOGY

DEPARTMENT OF BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University, Chennai)

K. VELLAKULAM-625 701 (Near Virudhunagar)

APRIL 2021

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BONAFIDE CERTIFICATE

Certified that the project report **"RUBBER SEED OIL: A POTENTIAL SOURCE FOR BIODIESEL PRODUCTION"** is the bonafide work of **"ABI SHERLIN E (920417214001) , ANCY A (920417214003) & DHANA PRABHAA S (920417214008)"** who carried out the project under my supervision

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SIGNATURE
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Kamaraj College of Engg & Tech,
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28/4/2021

INTERNAL EXAMINER

EXTERNAL EXAMINER

INHIBITORY POTENTIAL OF PHYTOCHEMICALS FROM *CARDIOSPERMUM HALICACABUM* AND *MORINGA OLEIFERA* AGAINST MATRIX METALLO PROTEINASE-9: *IN-SILICO* AND *IN-VITRO* STUDIES

PROJECT REPORT

Submitted by

J.GOWRI (920417214014)

P.G.MUTHULAKSHMI (920417214029)

P.NIVETHA (920417214033)

in partial fulfillment of the requirements for the degree of

BACHELOR OF TECHNOLOGY

IN

BIOTECHNOLOGY

DEPARTMENTOFBIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING ANDTECHNOLOGY

(An Autonomous Institution Affiliated to Anna University, Chennai)

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APRIL 2021

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institution Affiliated to Anna University, Chennai)
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BONAFIDE CERTIFICATE

Certified that the project report ""**INHIBITORY POTENTIAL OF PHYTOCHEMICALS FROM *CARDIOSPERMUM HALICACABUM* AND *MORINGA OLEIFERA* AGAINST MATRIX METALLOPROTEINASE-9: *IN-SILICO* AND *IN-VITRO* STUDIES**" is the bonafide work of "**J.GOWRI(920417214014) ,P.G.MUTHULAKSHMI(920417214029) & P.NIVETHA(920417214033)**" who carried out the project under my supervision.

M. Vasanthi

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D. Pradiba

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Assistant Professor,
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K. Vellakulam, Madurai.

K. Gowthy 28/9/2021

INTERNAL EXAMINER

EXTERNAL EXAMINER

DRUG REPURPOSING STUDIES ON DIFFERENTIALLY EXPRESSED GENES BASED NETWORK TARGETS OF PARKINSON DISORDER

PROJECT REPORT

Submitted by

R.GOWSHIKA SHRI (920417214015)

S.INDHU MATHI (920417214017)

A.MONIKA (920417214027)

in partial fulfillment of the requirements for the degree of

BACHELOR OF TECHNOLOGY

IN

BIOTECHNOLOGY

DEPARTMENT OF BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University, Chennai)

K. VELLAKULAM-625 701 (Near Virudhunagar)

APRIL 2021

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution Affiliated to Anna University, Chennai)

K.VELLAKULAM-625 701 (Near Virudhunagar)

BONAFIDE CERTIFICATE

Certified that the project report **"DRUG REPURPOSING STUDIES ON DIFFERENTIALLY EXPRESSED GENES BASED NETWORK TARGETS OF PARKINSON DISORDER"** is the bonafide work of **"GOWSHIKA SHRI R. (920417214015), INDHU MATHI S. (920417214017) & MONIKA A. (920417214027)"** who carried out the project under my supervision.

M. Vasanthi

SIGNATURE

Dr. M. VASANTHI

HEAD OF THE DEPARTMENT

Professor,

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Kamaraj College of Engg & Tech,

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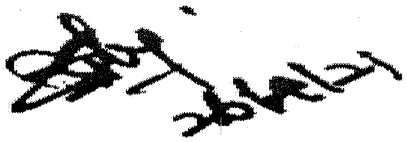

SIGNATURE

Mr.S.MANIBALAN

SUPERVISOR

Assistant Professor,

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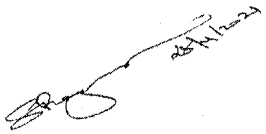
K. Vasanthi 28/4/2024

INTERNAL EXAMINER



EXTERNAL EXAMINER

ANNA UNIVERSITY:: CHENNAI 600 025
AFFILIATED INSTITUTIONS
M. TECH. BIOTECHNOLOGY
REGULATIONS – 2017
CHOICE BASED CREDIT SYSTEM

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs) :

I. To provide students with solid fundamentals and strong foundation in statistical, scientific and engineering subjects required to create and innovate in the field of biotechnology.
II. To train students with good scientific and technical knowledge so as to comprehend,
analyze, design, and create novel products and solutions for developing novel therapeutics and enzymes.
III. To prepare students to excel and succeed in Biotechnology research or industry through the latest state-of-art post graduate education.
IV. To sensitize students about scientific temper and the necessity of bioethics, social responsibility and awareness of the environment.
V. This course enables the student to develop good communication and leadership skills, respect for authority, loyalty and the life-long learning needed for a successful scientific and professional career.

PROGRAMME OUTCOMES (POs):

On successful completion of the Masters in Biotechnology graduates will be able to

1. Acquire in depth knowledge of Biological science and Bioengineering for gaining ability to develop and evaluate new ideas
2. Demonstrate Scientific and technological skills to design and perform research through modern techniques for the development of high throughput process and products.
3. Analyze Biotechnological problems and formulate intellectual and innovative vistas for research and development
4. Provide potential solutions for solving technological problems in various domains of Biotechnology considering the societal, public health, cultural environmental factors.
5. Examine the outcomes of Biotechnological issues critically and gain knowledge for composing suitable corrective measures.
6. Create and apply modern engineering tools for the prediction and modeling of complex bioengineering activities
7. Posses self management and team work skills towards collaborative, multidisciplinary scientific endeavors in order to achieve common goals
8. Develop entrepreneurial and managerial skills for the implementation of multidisciplinary projects
9. Demonstrate adherence to accepted standards of professional bioethics and social responsibilities
10. Posses the attitude necessary for lifelong and acquire communication skills relevant to professional positions

SEMESTER III

S.No	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
PRACTICAL								
1	BY5311	Advanced Genetic Engineering Laboratory	PC	6	0	0	6	3
2	BY5312	Bioprocess and Downstream Processing Laboratory	PC	6	0	0	6	3
PROJECT								
4	BY5313	Project Work (Phase I)	EEC	12	0	0	12	6
			TOTAL	**24**	**0**	**0**	**24**	**12**

SEMESTER IV

S.No	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
PROJECT								
1	BY5411	Project Work (Phase II)	EEC	24	0	0	24	12
			TOTAL	**24**	**0**	**0**	**24**	**12**

TOTAL CREDITS : 75

SEMESTER I, PROFESSIONL ELECTIVES I

S.No	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1	BY5001	Molecular Concepts in Biotechnology (For Engineering Stream)	PE	3	3	0	0	3
2	BY5002	Principles of Chemical Engineering (For Science Stream)	PE	3	3	0	0	3
3	BY5003	Metabolic Process and Engineering (For Biotechnology Stream)	PE	3	3	0	0	3

SEMESTER I, PROFESSIONL ELECTIVES II

S.No	COURSE CODE	COURSE TITLE	CATE GORY	CONTACT PERIODS	L	T	P	C
1	BY5004	Animal Biotechnology	PE	3	3	0	0	3
2	BY5005	Computer Aided Learning of Structure and Function of Proteins	PE	4	2	2	0	3
3	BY5006	Analytical Techniques in Biotechnology	PE	3	3	0	0	3
4	BY5007	Bio Thermodynamics	PE	3	3	0	0	3
5	BY5008	Plant Biotechnology	PE	3	3	0	0	3

KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)
S.P.G.Chidambara Nadar - C.Nagammal Campus
S.P.G.C.Nagar, K.Vellakulam - 625 701 (Near Virudhunagar), Madurai District.

DEPARTMENT OF BIOTECHNOLOGY

M.Tech. SECOND YEAR (2020 -21) - PROJECT ALLOTMENT LIST-PHASE 1

S.NO	ROLL NO	UNI.REG.NO	NAME	PROJECT GUIDE	PROJECT GROUP	PROJECT TITLE
1	19PBTE04	920419509001	ABINAYA.R	Dr. R. Shyam kumar	1	Screening of Lichen Bioactive compounds against mutated spike protein of Corona Virus
2	19PBTE03	920419509004	SASI REKHA.V	Dr. S. Karthikumar	2	Image Based Assay Development for the quantification of Phycocyanin from *Spirulina plantensis*
3	19PBTE02	920419509002	OVIYAPRIYA.M	Dr. S. Mariaamalraj	3	Extraction of Saponin from plant source

Project co - ordinator

HoD/BT

EXTRACTION OF SAPONIN FROM PLANT SOURCE

A THESIS

Submitted by

OVIYAPRIYA.M

(920419509002)

In partial fulfillment for the award of the degree of

MASTER OF TECHNOLOGY
IN

BIOTECHNOLOGY

DEPARTMENT OF BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY,

K.VELLAKULAM-625 701

ANNA UNIVERSITY, CHENNAI 600 025

JANUARY 2021

ANNA UNIVERSITY, CHENNAI

BONAFIDE CERTIFICATE

ertified that this project report titled **"EXTRACTION OF SAPONIN FROM PLANT SOURCE"** for the Phase-I of the project, is the bonafide work of **Ms. OVIYAPRIYA.M (920419509002),** who carried out the research under my supervision, for the partial fulfillment of requirements for the award of degree of Master of Technology. Certified further, that to the best of my knowledge and belief, the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

SIGNATURE OF HOD

HOD
DEPARTMENT OF BIOTECHNOLOGY
Kamaraj College of Engineering & Technology
VIRUDHUNAGAR.

Dr. M. VASANTHI,
Professor and Head
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Kamaraj College of Engineering and
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SIGNATURE OF SUPERVISOR

Dr. S.MARIAAMALRAJ
Assistant Professor
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Submitted for Viva-Voce Examination held at **KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY, K.Vellakulam** on **30, January, 2021**

Internal Examiner

External Examiner

IMAGE BASED ASSAY DEVELOPMENT FOR THE QUANTIFICATION OF PHYCOCYANIN FROM *Spirulina platensis*

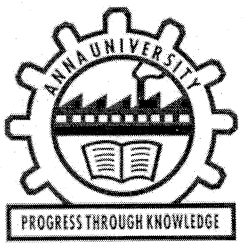
A THESIS

Submitted by

SASI REKHA V

in partial fulfillment for the award of the degree of

MASTER OF TECHNOLOGY IN BIOTECHNOLOGY



DEPARTMENT OF BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY, K.VELLAKULAM

(An Autonomous Institution affiliated to Anna University, Chennai)

JANUARY 2021

ANNA UNIVERSITY, CHENNAI

BONAFIDE CERTIFICATE

Certified that this project report titled **"IMAGE BASED ASSAY DEVELOPMENT FOR THE QUANTIFICATION OF PHYCOCYANIN FROM *Spirulina platensis*"** for the Phase-I of the project, is the bonafide work of **Ms. SASI REKHA V (920419509004)**, who carried out the research under my supervision, for the partial fulfillment of requirements for the award of degree of Master of Technology. Certified further, that to the best of my knowledge and belief, the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

SIGNATURE OF HOD

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DEPT. OF BIOTECHNOLOGY
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VIRUDHUNAGAR.

Dr. M. VASANTHI,
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30/1/21

SIGNATURE OF SUPERVISOR

Dr. S. KARTHIKUMAR
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Certified that the candidate was examined by me in the viva voce examination conducted at Kamaraj College of Engineering and Technology,(Autonomous) Madurai on **30, January 2021.**

30/1/21

INTERNAL EXAMINER

30/1/21

EXTERNAL EXAMINER

SCREENING OF LICHEN BIOACTIVE COMPOUNDS AGAINST MUTATED SPIKE PROTEIN OF CORONA VIRUS

A THESIS

Submitted by

ABINAYA.R

in partial fulfillment for the award of the degree of

MASTER OF TECHNOLOGY IN BIOTECHNOLOGY

DEPARTMENT OF BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY, K. VELLAKULAM

(An Autonomous Institution affiliated to Anna University, Chennai)

JANUARY 2021

ANNA UNIVERSITY, CHENNAI

BONAFIDE CERTIFICATE

certified that this project report titled **"SCREENING OF LICHEN BIOACTIVE COMPOUNDS AGAINST MUTATED SPIKE PROTEIN OF CORONA VIRUS"** for the Phase-I of the project, is the bonafide work of **Ms.ABINAYA.R (Reg.No:920419509001),** who carried out the research under our supervision, for the partial fulfillment of requirements for the award of degree of Master of Technology. Certified further, that to the best of our knowledge and belief, the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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SIGNATURE OF Co-SUPERVISOR

Mr. S.MANIBALAN
Assistant Professor
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SIGNATURE OF SUPERVISOR

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INTERNAL EXAMINER

EXTERNAL EXAMINER

EFFECT OF VARIOUS LIGHT INTENSITY ON GROWTH OF CYANOBACTERIA IN DIFFERENT MEDIA COMPOSITION

A THESIS

Submitted by

R.ABINAYA

In fulfilment for the award of the degree of

MASTER OF TECHNOLOGY IN

BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY

K.VELLAKULAM

ANNA UNIVERSITY, CHENNAI

JUNE 2021

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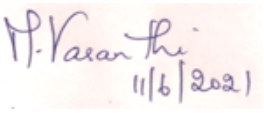
BONAFIDE CERTIFICATE

Certified that this Thesis titled **"EFFECT OF VARIOUS LIGHT INTENSITY ON GROWTH OF CYANOBACTERIA IN DIFFERENT MEDIA COMPOSITION"** is the bonafidework of**ABINAYA R(Reg. No: 920419509001)** who carried out the work under our supervision. Certified further that to the best of our knowledge the work reported here in does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.



Dr. M. Vasanthi

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Dr. R. Shyam Kumar

SUPERVISOR
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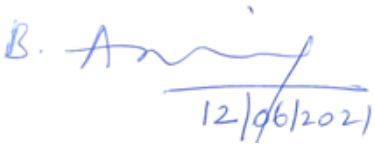
Madurai – 625701

Certified that the candidate was examined by me in Viva Voce Examination conducted at Kamaraj College of Engineering and Technology, Madurai on **12 JUNE 2021.**

INTERNAL EXAMINER



EXTERNAL EXAMINER

OPTIMIZATION OF EXTRACTION OF SAPONIN FROM ORGANIC WASTE

A THESIS

Submitted by

OVIYAPRIYA. M

(920419509002)

in partial fulfillment for the award of the degree of

MASTER OF TECHNOLOGY IN

BIOTECHNOLOGY

DEPARTMENT OF BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY,

K.VELLAKULAM-625 701

ANNA UNIVERSITY, CHENNAI 600 025

JUNE 2021

ANNA UNIVERSITY, CHENNAI

BONAFIDE CERTIFICATE

Certified that this project report titled **"OPTIMIZATION OF EXTRACTION OF SAPONIN FROM ORGANIC WASTE"** for the Phase-II of the project, is the bonafide work of **Ms. OVIYAPRIYA.M (920419509002),** who carried out the research under my supervision, for the partial fulfillment of requirements for the award of degree of Master of Technology. Certified further, that to the best of my knowledge and belief, the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

M. Vasanthi 11/6/2021

SIGNATURE OF HOD

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S. M... 12/6/2021

SIGNATURE OF SUPERVISOR

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Kamaraj College of Engineering and
Technology, K.Vellakulam – 625 701.

Submitted for Viva-Voce Examination held at **KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY, K.Vellakulam** on **12, JUNE 2021**

12/6/21

Internal Examiner

B. A... 12/06/2021

External Examiner

ENHANCEMENT OF THERMAL STABILITY OF PHYCOCYANIN EXTRACTED FROM *Spirulina platensis*

A THESIS

Submitted by

SASI REKHA V

in partial fulfillment for the award of the degree of

MASTER OF TECHNOLOGY IN BIOTECHNOLOGY

DEPARTMENT OF BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY, K.VELLAKULAM

(An Autonomous Institution affiliated to Anna University, Chennai)

JUNE 2021

ANNA UNIVERSITY, CHENNAI

BONAFIDE CERTIFICATE

Certified that this project report titled **"**ENHANCEMENT OF THERMAL STABILITY OF PHYCOCYANIN EXTRACTED FROM *Spirulina platensis***"** for the Phase-II of the project, is the bonafide work of **Ms. SASI REKHA V (920419509004)**, who carried out the research under my supervision, for the partial fulfillment of requirements for the award of degree of Master of Technology. Certified further, that to the best of my knowledge and belief, the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

M. Vasanthi 11/6/2021

SIGNATURE OF HOD

Dr. M. VASANTHI,
Professor and Head
Department of Biotechnology
Kamaraj College of Engineering and Technology, K.Vellakulam – 625 701

4/6/21

SIGNATURE OF SUPERVISOR

Dr. S. KARTHIKUMAR
Assistant Professor
Department of Biotechnology,
Kamaraj College of Engineering and Technology, K.Vellakulam – 625701

Certified that the candidate was examined by me in the viva voce examination conducted at Kamaraj College of Engineering and Technology, (Autonomous) Madurai on **12, June 2021.**

12/6/21

INTERNAL EXAMINER

B. Anand 12/06/2021

EXTERNAL EXAMINER

KAMARAJ
COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)

S.P.G.Chidambara Nadar - C.Nagammal Campus

S.P.G.C.Nagar, K.Vellakulam - 625 701, (Near Virudhunagar), Madurai District.

DEPARTMENT OF BIOTECHNOLOGY

M.TECH BIOTECHNOLOGY

R – 2020 AUTONOMOUS CURRICULUM & SYLLABUS

CHOICE BASED CREDIT SYSTEM

VISION:

To make the Department of Biotechnology, unique of its kind in the field of research and development activities pertaining to the field of biotechnology in this part of the world.

MISSION:

To impart highly innovative and technical knowledge in the field of biotechnology to the urban and rural student folks through “Total Quality Education”.

PROGRAM OUTCOMES:

PO1: An ability to independently carry out research /investigation and development work to solve practical problems

PO2: An ability to write and present a substantial technical report/document.

PO3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program

SEMESTER III

S.NO	CODE	COURSE TITLE	CATEGORY	PERIODS PER WEEK			TOTAL CONTACT PERIOD	CREDITS
				L	T	P		
PRACTICALS								
1	MB1311	Advanced Genetic Engineering Laboratory	PC	0	0	6	6	3
2	MB1312	Integrated bioprocess laboratory	PC	0	0	6	6	3
3	MB1321	Project Phase –I	EE	0	0	12	12	6
TOTAL				**0**	**0**	**24**	**24**	**12**

SEMESTER IV

S.NO	CODE	COURSE TITLE	CATE GORY	PERIODS PER WEEK			TOTAL CONTACT PERIOD	CREDITS
				L	T	P		
PRACTICALS								
1	MB1421	Project Phase – II	EE	0	0	24	24	12
TOTAL				**0**	**0**	**24**	**24**	**12**

TOTAL NO OF CREDITS: 73

SEMESTER I, PROFESSIONAL ELECTIVES- I

S.No	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	CREDITS
1	MB1131	Metabolic Process and Engineering (For Biotechnology Stream)	PE	3	3	0	0	3
2	MB1132	Molecular Concepts in Biotechnology (For Engineering Stream)	PE	3	3	0	0	3
3	MB1133	Principles of Chemical Engineering (For Science Stream)	PE	3	3	0	0	3

REFERENCES

1. Niazi, S.K. and Brown, J.L., 2017. *Fundamentals of modern bioprocessing*. CRC Press.
2. Saha, G., Barua, A. and Sinha, S., 2017. *Bioreactors: Animal Cell Culture Control for Bioprocess Engineering*. CRC Press.
3. Biotech, A.P., 2001. *Protein purification handbook*

MB1321 **PROJECT PHASE - I**

L	T	P	C
0	0	12	6

OBJECTIVES

- To Make the students identify a problem/process relevant to their field of interest that can be carried out
- To Make them equipped to search databases and journals to collect relevant data and identify a solution
- To Plan, learn and perform experiments to verify the solution

COURSE OUTCOMES:

At the end of the course students will be able to

CO 1: Identify the field of interest towards research/industrial problems
CO 2: equip the students to search and think about logical solutions

SEMESTER IV

MB1421 **PROJECT PHASE - II**

L	T	P	C
0	0	24	12

OBJECTIVES

1. Train students to analyze a problem/ think innovatively to develop new methods/product /process
2. Make them comprehend how to find solutions/ create products economically and in an environmentally sustainable way
3. Enable them to acquire technical and experimental skills to validate the solution, analyze the results and communicate

COURSE OUTCOMES:

At the end of the project the student will be able to

CO 1: Formulate problems statement for developing new methods/solutions/processes.
CO 2: Plan experiments in a logical manner/ work out sustainability
CO 3: Execute experiments systematically and collect the data.
CO 4: Assess, interpret and communicate the results

KAMARAJ COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)

S.P.G.Chidambara Nadar - C.Nagammal Campus

S.P.G.C.Nagar, K.Vellakulam - 625 701 (Near Virudhunagar), Madurai District.

DEPARTMENT OF BIOTECHNOLOGY

M.Tech. SECOND YEAR (2021 -22) - PROJECT ALLOTMENT LIST (PROJECT WORK - PHASE I)

S.NO	ROLL NO	UNI.REG.NO	NAME	PROJECT GUIDE	PROJECT GROUP	PROJECT TITLE
1	20PMB01	920420PMB01	KASHIMMA.V.V	Dr.S.Mariaamalraj	1	Removal of dyes from aqueous system using hybrid hydrogel
2	20PMB02	920420PMB02	AJITH.C	Dr.R.Shyamkumar	2	Isolation and Enzyme activity of Gut Probiotic bacteria from freshwater fish
3	20PMB03	920420PMB03	VIKNESH.V	Dr.S.Karthikumar	3	Sustainable approach for leguminous crop yield improvement using native rhizobacterium in gel preparation.
4	20PMB04	920420PMB04	NIVETHITHA.V.B	Dr.A.Ronaldo Anuf	4	Statistical optimization of process parameters for extraction of polyphenols from *Artocarpus heterophyllus* peel
5	20PMB05	920420PMB05	VINNARASI.A	Dr.R.Shyamkumar	5	Development of Boiled Rice Water Based Bio-composite film
6	20PMB06	920420PMB06	AKSHAYSRI.P	Mr.S.Manibalan	6	Computational designing of DNA aptamer to bind spike protein of COVID variants – As diagnostic agent

Project co - ordinator

HoD/BT

ISOLATION AND ENZYME ACTIVITY OF GUT PROBIOTIC BACTERIA FROM FRESHWATER FISH

PHASE I REPORT

Submitted by

AJITH. C

in partial fulfillment for the award of the degree of

MASTER OF TECHNOLOGY IN BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING & TECHNOLOGY, (An Autonomous Institution)
VIRUDHUNAGAR

JANUARY 2022

KAMARAJ COLLEGE OF ENGINEERING & TECHNOLOGY (An Autonomous Institution) VIRUDHUNAGAR

BONAFIDE CERTIFICATE

Certified that this Report titled **"ISOLATION AND ENZYME ACTIVITY OF GUT PROBIOTIC BACTERIA FROM FRESHWATER FISH"** is a bonafide work of **AJITH. C (Reg. No. 920420PMB02)** carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation based on which a degree or award was conferred on an earlier occasion on this or any other candidate.

Signature of HOD with Date

HOD
DEPT. OF BIOTECHNOLOGY
Kamaraj College of Engineering & Technology
VIRUDHUNAGAR.

Dr. R. Shyam kumar
Professor and Head
Department of Biotechnology
Kamaraj College of Engineering
and Technology, Virudhunagar.

Signature of the supervisor with Date

Dr. R. Shyam Kumar
Professor
Department of Biotechnology
Kamaraj College of Engineering and
Technology, Virudhunagar.

Certified that the candidate was examined by me in the viva voce examination conducted on **03.01.2022.**

DEPT. OF BIOTECHNOLOGY KCET

INTERNAL EXAMINER

EXTERNAL EXAMINER

MANONMANIAM SUNDARANAR UNIVERSITY
CENTRE FOR MARINE SCIENCE AND TECHNOLOGY

Dr. T. Citarasu, Ph.D.
Associate Professor

Rajakkamangalam - 629 502
Tamil Nadu, India
Telefax: + 91 4652 253078
Mobile : + 91- 9994273822
Email : citarasu@msuniv.ac.in

31st December 2021

BONAFIDE CERTIFICATE

This is to certify that this dissertation entitled **"Isolation and Enzyme activity of gut probiotic bacteria from freshwater fish"** is the bonafide work of **Mr. Ajith. C (Reg No: 920420pmb02),** II M. Tech Biotechnology, Kamaraj College of Engineering and Technology, K. Vellakulam, near Virudhunagar. In the partial fulfillment for the award of Master of Technology, in Biotechnology, under my guidance in Centre for Marine Science and Technology, Manonmaniam Sundaranar University, Rajakamangalam and it is made clear that this dissertation has not been submitted for the award of any other degree, diploma, associateship, a fellowship of any other University.

Place: Rajakamangalam
Date: 31.12.2021

Signature of the Guide

Dr. T. CITARASU, Ph.D.,
Associate Professor
Centre for Marine Science & Technology
Manonmaniam Sundaranar University
Rajakkamangalam - 629 502
K. K. Dist., Tamilnadu
Tele: +91 4652-253078
E-mail: citarasu@gmail.com

SUSTAINABLE APPROACH FOR LEGUMINOUS CROP YIELD IMPROVEMENT USING NATIVE RHIZOBACTERIUM IN GEL PREPARATION

PHASE 1 REPORT

Submitted by

VIKNESH V

in partial fulfilment for the award of the degree of

MASTER OF TECHNOLOGY IN BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING & TECHNOLOGY,

(An Autonomous Institution)

VIRUDHUNAGAR

JANUARY 2022

KAMARAJ COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution)

VIRUDHUNAGAR

BONAFIDE CERTIFICATE

Certified that this report entitled **"SUSTAINABLE APPROACH FOR LEGUMINOUS CROP YIELD IMPROVEMENT USING NATIVE RHIZOBACTERIUM IN GEL PREPARATION"** is the bonafide work of VIKNESH V (Roll No. 920420PMB03) who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form any other part of thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

Signature of HOD

Dr. R. Shyam kumar

Professor and Head

Department of Biotechnology

Kamaraj college of Engineering and Technology, Virudhunagar.

HOD
DEPT. OF BIOTECHNOLOGY
Kamaraj College of Engineering & Technology
VIRUDHUNAGAR.

Signature of the supervisor

Dr. S. Karthikumar

Assistant professor

Department of Biotechnology

Kamaraj college of Engineering and Technology, Virudhunagar.

DEPT. OF BIOTECHNOLOGY

Certified that the candidate was examined by me in the viva voce examination conducted on **03.01.2022.**

Internal Examiner

External Examiner

REMOVAL OF DYES FOM AQUEOUS SYSTEM USING HYBRID HYDROGEL

PHASE 1 REPORT

Submitted by

V.V.KASHIMMA

in partial fulfilment for the award of the degree of

MASTER OF TECHNOLOGY IN BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING & TECHNOLOGY,

(An Autonomous Institution)

VIRUDHUNAGAR

JANUARY 2022

KAMARAJ COLLEGE OF ENGINEERING & TECHNOLOGY (An Autonomous Institution)

VIRUDHUNAGAR

BONAFIDE CERTIFICATE

Certified that this Report entitled "**REMOVAL OF DYES FROM AQUEOUS SYSTEM USING HYBRID HYDROGEL**" is the bonafide work of **V.V.KASHIMMA (Roll No. 920420PMB01)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form any other part of thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

3/1/2022

Signature of HOD with Date

Dr. R. Shyam kumar
Professor and Head
Department of Biotechnology
Kamaraj college of Engineering
and Technology, Virudhunagar.

03/01/2022

Signature of the supervisor with Date

Dr. S. Mariaamalraj
Assistant professor
Department of Biotechnology
Kamaraj college of Engineering and
Technology, Virudhunagar.

Certified that the candidate was examined by me in the viva voce examination conducted on **03.01.2022.**

3/1/2022

INTERNAL EXAMINER

EXTERNAL EXAMINER

STATISTICAL OPTIMIZATION OF PROCESS PARAMETERS FOR EXTRACTION OF POLYPHENOLS FROM *ARTOCARPUS HETEROPHYLLUS* PEEL

PHASE I REPORT

Submitted by

V.B.NIVETHITHA

in partial fulfillment for the award of the degree of

MASTER OF TECHNOLOGY IN BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING & TECHNOLOGY,

(An Autonomous Institution)

VIRUDHUNAGAR

JANUARY 2022

KAMARAJ COLLEGE OF ENGINEERING & TECHNOLOGY (An Autonomous Institution) VIRUDHUNAGAR

BONAFIDE CERTIFICATE

Certified that this Report entitled "**STATIISTICAL OPTIMIZATION OF PROCESS PARAMETERS FOR EXTRACTION OF POLYPHENOLS FROM *ARTOCARPUS HETEROPHYLLUS* PEEL**" is the bonafide work of **V.B.NIVETHITHA (Reg No. 920420PMB04)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form any other part of thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

3/1/2022

Signature of HOD with Date

Dr. R. Shyam kumar

Professor and Head

Department of Biotechnology

Kamaraj college of Engineering and Technology, Virudhunagar.

HOD DEPT. OF BIOTECHNOLOGY Kamaraj College of Engineering & Technology VIRUDHUNAGAR.

3/1/2022.

Signature of the supervisor with Date

Dr. A. Ronaldo Anuf

Assistant professor

Department of Biotechnology

Kamaraj college of Engineering and Technology, Virudhunagar.

Certified that the candidate was examined by me in the viva voce examination conducted on **03.01.2022.**

3/1/2022

INTERNAL EXAMINER

DEPT. OF BIOTECHNOLOGY KCET

3/1/22

EXTERNAL EXAMINER

COMPUTATIONAL DESIGNING OF DNA APTAMER TO BIND SPIKE PROTEIN OF COVID VARIANTS – AS DIAGNOSTIC AGENT

PHASE I REPORT

Submitted by

P.AKSHAYSRI

in partial fulfillment for the award of the degree of

MASTER OF TECHNOLOGY IN BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING & TECHNOLOGY,

(An Autonomous Institution)

VIRUDHUNAGAR

JANUARY 2022

KAMARAJ COLLEGE OF ENGINEERING & TECHNOLOGY (An Autonomous Institution) VIRUDHUNAGAR

BONAFIDE CERTIFICATE

Certified that this Report entitled "**COMPUTATIONAL DESIGNING OF DNA APTAMER TO BIND SPIKE PROTEIN OF COVID VARIANTS – AS DIAGNOSTIC AGENT**" is the bonafide work of **P.AKSHAYSRI (Roll No. 920420PMB06)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form any other part of thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

P. Shyam 3/1/2022

Signature of HOD with Date

Dr. R. Shyam kumar

Professor and Head

Department of Biotechnology

Kamaraj college of Engineering and Technology, Virudhunagar.

HOD
DEPT. OF BIOTECHNOLOGY
Kamaraj College of Engineering & Technology
VIRUDHUNAGAR.

03/01/22

Signature of the supervisor with Date

Mr. S. Manibalan

Assistant professor

Department of Biotechnology

Kamaraj college of Engineering and Technology, Virudhunagar.

Certified that the candidate was examined by me in the viva voce examination conducted on **03.01.2022.**

DEPT. OF BIOTECHNOLOGY KCET

P. Shyam 3/1/2022

INTERNAL EXAMINER

3/1/22

EXTERNAL EXAMINER

DEVELOPMENT OF BOILED RICE WATER BASED BIO-COMPOSITE FILM

PHASE I REPORT

Submitted by

VINNARASI.A

in partial fulfillment for the award of the degree of

MASTER OF TECHNOLOGY IN BIOTECHNOLOGY

KAMARAJ COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution)

VIRUDHUNAGAR

JANUARY 2022

KAMARAJ COLLEGE OF ENGINEERING & TECHNOLOGY (An Autonomous Institution) VIRUDHUNAGAR

BONAFIDE CERTIFICATE

Certified that this Report entitled "**DEVELOPMENT OF BOILED RICE WATER BASED BIOCOMPOSITE FILM**" is the bonafide work of **A. VINNARASI (9204 20PMB05)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form any other part of thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

Signature of HOD with Date

Dr. R. Shyam Kumar
Professor and Head
Department of Biotechnology
Kamaraj College of Engineering
and Technology, Virudhunagar.

HOD
DEPT. OF BIOTECHNOLOGY
Kamaraj College of Engineering & Technology
VIRUDHUNAGAR

Signature of the supervisor with Date

Dr. R. Shyam Kumar
Professor
Department of Biotechnology
Kamaraj College of Engineering and
Technology, Virudhunagar.

Certified that the candidate was examined by me in the viva voce examination conducted on **03.01.2022.**

DEPT. OF BIOTECHNOLOGY
KCET

INTERNAL EXAMINER **EXTERNAL EXAMINER**