



ESTD. 1942

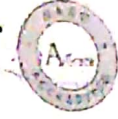
Karnatak Arts, Science & Commerce College, Bidar

ESTD. 1970

(Affiliated to Gulbarga University)

College With Potential for Excellence

Department of Biotechnology



**Add-on course on Food Biotechnology
2021-22**

Course coordinator

**Smt. Pooja shrigiri
Assistant Professor in Biotechnology**



Date: 05/11/21

To,
The Principal
Karnatak Arts, Science and Commerce College, Bidar

Sub: Request to grant permission to start add-on course on Food biotechnology from the academic year 2021-22: Reg.

Respected Sir,

As per the guidelines issued by IQAC, we would like to start the add-on course on "Food biotechnology" from the academic year 2021-22: with intake of 19 students. Please permit us to start the add-on course and do the needful.

Thanking You.

Head
Department of Biotechnology

PRINCIPAL
Karnataka Arts Sci. & Com. College
BIDAR-585401



Karnatak Arts, Science & Commerce College, Bidar

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Department of Biotechnology



Meeting Minutes for Institutional Board of Studies for Add-on Course on Food Biotechnology held on (07/01/2022)

The institutional Board of Studies of the Department of Biotechnology for the add-on course on food biotechnology held on (add date) in Department of Biotechnology at 10:30 am.

| Sl No. | Name | Institute | Designation |
|--------|---------------------|---|-----------------|
| 1 | Dr.M.S.Patil | Assistant Professor Department of Biotechnology, KASCC, Bidar. | Chairman |
| 2 | Smt. Pooja shrigiri | Assistant Professor, Department of Biotechnology , KASCC, Bidar. | Member |
| 3 | Mr.Manikrao | Assistant Professor, Department of Biotechnology , KASCC, Bidar. | Member |
| 4 | Mr.Prasad Vanjare | Assistant Professor, Department of Food technology , KASCC, Bidar. | External Expert |

In the beginning of the meeting the Chairman of the BOS Sri. Dr.M.S.Patil welcomed all members and briefed them about the academic activities of the Department of Biotechnology. The members expressed their highly appreciation and satisfaction about the courses and activities of the department.



After that institutional BOS discussed and resolved the following items:

Item 1. Starting of the add-on course on Food biotechnology.

The BOS discussed the item and resolved to start the add-on course on Simulation and Modelling using Mat lab.

Item 2. Approval of the Syllabus for add-on course.





The BOS discussed and approved the syllabus for the add-on course on Simulation and Modelling using Mat lab.


Item 3. Approval of admission criteria

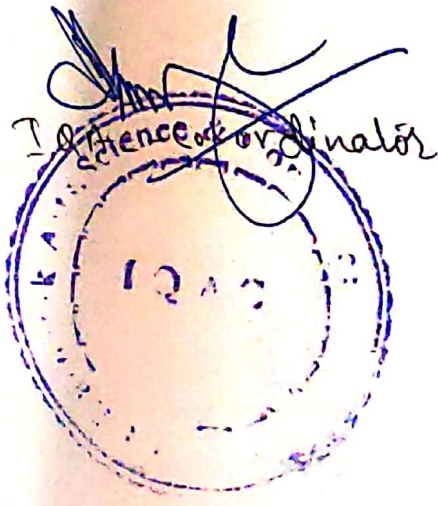
The BOS discussed and approve the criteria for admission and resolved that any students enrolled in UG or PG course in KASCC can enrol in this course. In addition to this BOS also finalized the exam pattern.


Meeting of the BOS was concluded with the vote of thanks by Smt. Pooja shrigiri, Assistant Professor in Department of Biotechnology.

The following members were present in the meeting:

- Dr.M.S.Patil 
- Mr.Prasad Vanjare 
- Smt. Pooja shrigiri 
- Mr.Manikrao 


 H.O.D
 HEAD
 Dept of Biotechnology
 Karnataka Arts Sci. & Com. College
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Add-on Course on Food Biotechnology

Syllabus

Theory

| Unit | Topic | Hour |
|------|--|------|
| 1 | Chemical nature of Genetic material, properties and function of the genetic material, organization of the genetic material in bacteria, eukaryotes and viruses. | 5 |
| 2 | Recombinant DNA Technology: Restriction Enzyme, Cloning Vectors, cloning procedure, cloning of specific genes and their identification | 4 |
| 3 | Ethical issue concerning GM Foods: Testing for GMOs, current guidelines for production, release and moment of GMOs, labeling and traceability, trade related aspect, bio-safety, risk assessment, risk management, public perception of GM foods, IPR, GMO, Act 2004 | 5 |
| 4 | HACCP: PRPs, GMP, Cleaning and Sanitation, Personal Hygiene | 3 |
| 5 | Food Safety Management System: Principle of FSMS, ISO 22000 and Quality Management System ISO 9000 | 3 |

Practical:

| Unit | Topic | Hour |
|------|--|------|
| 1 | Isolation and Analysis of chromosomal/genomic DNA from E coli and Bacillus cereus. | 3 |
| 2 | Introduction of ELISA/Southern blot/DNA finger printing etc. | 3 |
| 3 | Production of biomass from fruit and vegetable waste. | 3 |
| 4 | Gel Electrophoresis Techniques | 3 |
| 5 | Preparation of cookies and biscuit fortified with Ragi flour and oyster mushroom (Pleurotus sp.) | 3 |



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Department of Biotechnology

Add-on Course on Food Biotechnology

Preamble: This course is to provide fundamental knowledge about food Science and technology. To enable the students to understand food composition and its physicochemical, Nutritional and sensory aspects. An ability to work in the domain of food processing ,quality assurance and quality control in private and government organization and research laboratories to design or can also emerge as an entrepreneur.

Objectives:

- As a food biotechnologist ,it is necessary to know that the new varieties of foods and crops are developed.
- It is also necessary to know how to develop hybrid GM food as well as the patenting issue related to the use of technology.
- The students also gain the fundamental aspects of r-DNA technology .

Instructional Design:

This course is of 35-hour duration which includes theory classes and Practical etc.

Medium of Instruction: Biotechnology

Course Structure and Examination Scheme:

Total contact hours:

Theory Classes: 20 Hours
Practicals : 15 Hours

Mode of Examination:

Theory Exam:
practical Exam

25 Marks
25 Marks

Eligibility: Students enrolled in PG
No. of Seats: 19 (Each batch)



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ADD-ON Course Food Biotechnology

Department of Biotechnology

Outcomes

1. To emphasize the importance of food safety ,food sanitization food law and regulations food engineering and packaging in food industry.
2. Students also will gain the fundamental aspects of Safety guidelines of rDNA research;
3. The student will gain basic knowledge of IPR (patent, design, copyright and Geographical indication).
Significance of IPR and how to obtain patent
4. An ability to acquire proficiency in solving engineering problems related to modern food sector/industry.
5. To understand the emerging techniques and advanced food engineering concepts .





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Date: 13/01/2022

NOTICE

All the students are hereby informed that, the Department of **Biotechnology** is starting the add-on course for PG students on "Food Biotechnology" from the 17/01/2022; interested students can enroll their names on or before 20/01/2022 in the Department of Biotechnology.

Handwritten initials

HOD HEAD
Dept. of Biotechnology
Karnatak Arts, Sci. & Com. College
BIDAR-585401

Handwritten signature

Principal
PRINCIPAL
Karnatak Arts Sci. & Com. College
BIDAR-585401



KRE Society's
Karnatak Arts, Science and Commerce
College, Bidar

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ADMISSION FORM

Certificate/Value added/Skill Development/Diploma/Advance Diploma Courses
 &

IAS/IPS/NET/SET Coaching Classes

Name of the Department Biotechnology Year _____

Name of the Student Rahul S/o Dattatraya Patil

Father's/Guardian's Name Dattatraya Patil

Date of Birth

Date

Month

Year

29

11

1999



Address for Correspondence :

Bidar Behind Karnataka cty.

Tq: Bidar

Dist: Bidar

Semester/Class :

M.Sc. 1st Sem

Register No :

PO4AE2150096

Percentage of previous semester :

74%

Contact No :

95 385 67 550

E-Mail ID :

rahulpatil02726@gmail.com

Course to be Joined:

Food - Biotechnology.

Rahul

Signature of the Student

[Signature]

HOD/Coordinator

Dept. of Biotechnology
Karnatak Arts, Sci. & Com. College
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[Signature]

Principal

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Department Of Biotechnology

Student Enrolment List

Class: M.sc I&III sem (Batch-1)



| Sl.No | Name of the Student | Contact No. | Signature |
|-------|---------------------|-------------|--------------|
| 1. | SAIKUMAR | 8748028901 | Saikumar |
| 2. | SHRUTI | | Shruti |
| 3. | VAISHNAVI | 8217246491 | Vaishnavi |
| 4. | ARTHI BIRADAR | 8660471434 | Arthi |
| 5. | SUPRIYA | 8105606163 | SUPRIYA |
| 6. | JAGDISH | 7760541273 | Jagdish |
| 7. | MAHESH | 7411502669 | Mahesh |
| 8. | ANAND | 9611210446 | Anand |
| 9. | SHREEKANTH | 8904827914 | Shreekanth |
| 10. | SNEHA | 9632038084 | Sneha |
| 11. | MADHU | 8970465409 | Madhu |
| 12. | SANGMESH | 7676847895 | Sangmesh |
| 13. | VIJAYKUMAR | 8546965585 | Vijaykumar |
| 14. | SHIVANAND | 8762271254 | Shivanand |
| 15. | AMAR MADGULE | 9739151625 | Amar Madgule |
| 16. | ANKITA | 9632859118 | Ankita |
| 17. | RAHUL PATIL | 9538567550 | Rahul Patil |
| 18. | AMITKUMAR | 7829572663 | Amitkumar |
| 19. | ASTHA | 7483776033 | Astha |

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K.R.E. Society's
KARNATAK ARTS, SCIENCE & COMMERCE COLLEGE, BIDAR
Certificate course "Food biotechnology" Time Table for the academic year: 2021- 2022
Department: Biotechnology (PG)
(With effect from 17/01/2022)



| Period/ Days | 08am to 10am | 11am to 01pm |
|------------------------|--|---|
| Friday and Saturday | Theory Mrs.Pooja Shrigiri/ Mr.Manikrao /Dr.M.S. Patil | Practical Mrs.Pooja Shrigiri/ Mr.Manikrao/Dr.M.S. Patil |

[Handwritten Signature]
HOD

HEAD
Dep. of Biotechnology
Karnataka Arts, Sci. & Com. College
B I D A R - 585 401

[Handwritten Signature]

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Add-on Course on Food Biotechnology

Batch- I Attendance (2021-22)

| NAME OF THE STUDENT | 21/1/22 | 22/1/22 | 23/1/22 | 24/1/22 | 25/1/22 | 26/1/22 | 27/1/22 | 28/1/22 | 29/1/22 | 30/1/22 | 31/1/22 | 1/2/22 | 2/2/22 |
|---------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|
| SAIKUMAR | P | A | A | P | P | A | P | P | P | P | P | P | P |
| SHRUTI | P | P | A | A | P | P | P | P | P | P | P | P | P |
| VAISHNAVI | P | P | P | P | A | A | A | P | P | P | A | P | P |
| ARTHI BIRADAR | P | P | A | P | P | P | P | A | A | A | A | P | P |
| SUPRIYA | P | P | P | P | P | P | P | A | A | P | P | P | P |
| JAGDISH | P | A | P | P | P | A | A | P | P | P | P | P | P |
| MAHESH | P | P | P | P | P | P | A | P | A | P | A | P | A |
| ANAND | P | P | P | P | P | P | A | P | P | A | P | P | P |
| SHREEKANTH | P | P | P | A | A | A | A | P | P | P | A | P | P |
| SNEHA | P | P | P | P | P | P | P | P | P | P | P | P | P |
| MADHU | P | P | P | P | A | A | A | A | P | P | A | A | A |
| SANGMESH | A | A | P | P | P | P | P | P | P | A | A | P | P |
| VIJAYKUMAR | P | P | A | A | P | P | P | P | P | A | P | A | A |
| SHIVANAND | A | P | P | P | P | P | A | P | P | P | A | A | A |
| AMAR MADGULE | P | P | P | P | A | A | A | P | P | A | A | A | P |
| ANKITA | A | P | P | P | P | A | A | P | P | P | P | P | P |
| RAHUL PATIL | P | P | P | A | A | A | A | P | P | P | A | P | A |
| AMITKUMAR | P | P | P | A | P | P | P | P | P | P | A | P | A |
| ASTHA | P | P | P | A | A | A | A | P | P | P | P | P | P |

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Add-on Course on Food Biotechnology

Batch- I Attendance (2021-22)



| NAME OF THE STUDENT | 10/01/22 | 22/01/22 | 23/01/22 | 29/01/22 | 6/5/22 | 20/5/22 | 21/5/22 | 27/5/22 | 3/06/22 | 09/06/22 |
|---------------------|----------|----------|----------|----------|--------|---------|---------|---------|---------|----------|
| SAIKUMAR | P | P | A | A | P | P | A | A | P | P |
| SHRUTI | P | P | P | P | A | A | P | P | P | A |
| VAISHNAVI | P | P | A | A | P | P | P | P | P | A |
| ARTHI BIRADAR | A | A | P | P | A | A | P | P | P | P |
| SUPRIYA | P | P | P | A | P | P | A | A | A | P |
| JAGDISH | P | P | P | P | P | P | P | A | A | P |
| MAHESH | P | P | P | P | A | A | P | P | P | P |
| ANAND | P | P | P | P | A | P | A | P | A | P |
| SHREEKANTH | A | A | P | P | P | A | P | A | P | P |
| SNEHA | P | P | P | P | P | P | P | P | A | P |
| MADHU | P | P | P | A | A | P | P | A | P | P |
| SANGMESH | P | P | A | A | P | A | A | P | A | P |
| VIJAYKUMAR | P | P | A | P | P | P | A | P | P | P |
| SHIVANAND | P | P | A | P | A | P | A | P | P | P |
| AMAR MADGULE | A | P | P | P | P | P | A | A | A | P |
| ANKITA | P | P | P | P | P | P | P | P | A | A |
| RAHUL PATIL | A | A | A | P | P | P | P | P | P | P |
| AMITKUMAR | A | A | P | P | P | P | A | P | A | P |
| ASTHA | P | P | P | P | A | A | P | P | P | P |
| of lty | | | | | | | | | | |

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Date: 25/05/2022

NOTICE

All the students enrolled in add-on course on “Food Biotechnology” are hereby informed that, the course examination is scheduled on 04/06/22 from 10.00am to 11.00am(Theory exam) and 2:00pm to 4:00pm(Practical exam), without fail.

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Internal assessment attendance List 2021-22

Class: M.Sc I & III sem (Batch-I)



| Sl.No | Student Name | Signature |
|-------|---------------|------------|
| 1 | SAIKUMAR | Saikumar |
| 2 | SHRUTI | Shruti |
| 3 | VAISHNAVI | Vaishnavi |
| 4 | ARTHI BIRADAR | Arthi |
| 5 | SUPRIYA | Supriya |
| 6 | JAGDISH | Jagdish |
| 7 | MAHESH | Mahesh |
| 8 | ANAND | Anand |
| 9 | SHREEKANTH | Shreekanth |
| 10 | SNEHA | Sneha |
| 11 | MADHU | Madhu |
| 12 | SANGMESH | Sangmesh |
| 13 | VIJAYKUMAR | Vijay |
| 14 | SHIVANAND | Shivanand |
| 15 | AMAR MADGULE | Amar |
| 16 | ANKITA | Ankita |
| 17 | RAHUL PATIL | Rahul |
| 18 | AMITKUMAR | Amit |
| 19 | ASTHA | Astha |

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Examination attendance List 2021-22

Class: M.sc I&III sem sem(Batch-1)

| Sl.No | Student Name | Signature |
|-------|---------------|------------|
| 1. | SAIKUMAR | Saikumar |
| 2. | SHRUTI | Shruti |
| 3. | VAISHNAVI | Vaishnavi |
| 4. | ARTHI BIRADAR | Arthi |
| 5. | SUPRIYA | Supriya |
| 6. | JAGDISH | Jagdish |
| 7. | MAHESH | Mahesh |
| 8. | ANAND | Anand |
| 9. | SHREEKANTH | Shreekanth |
| 10. | SNEHA | Sneha |
| 11. | MADHU | Madhu |
| 12. | SANGMESH | Sangmesh |
| 13. | VIJAYKUMAR | Vijay |
| 14. | SHIVANAND | Shivanand |
| 15. | AMAR MADGULE | Amar |
| 16. | ANKITA | Ankita |
| 17. | RAHUL PATIL | Rahul |
| 18. | AMITKUMAR | Amit |
| 19. | ASTHA | Astha |



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Department of Biotechnology

Academic Year: 2021-22

CERTIFICATE COURSE THEORY QUESTION PAPER

Subject: Food Biotechnology

TIME: 10am-12pm

DATE:20/04/22

MAX.MARKS=25

Answer any FIVE of the following

5x5=25

1. Explain chemical nature of Genetic material.
2. Write a note on properties and function of genetic material.
3. Explain steps in rDNA technology
4. Give a brief account on ethical issue concerning GM Foods.
5. Write a note on cleaning and sanitation.
6. Explain food safety management system.

STUDENT'S NAME: Vaishnavi

TOTAL MARKS OBTAINED



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Department of Biotechnology

Academic Year: 2021-22

CERTIFICATE COURSE PRACTICAL QUESTION PAPER

Subject: Food Biotechnology

TIME: 2Pm-5pm

DATE: 05/05/22

MAX.MARKS =25

5x5=25

1. Isolation and analysis of genomic DNA from E.coli
2. Production of biomass from fruit and vegetable waste
3. Demonstrate Gel electrophoresis technique

10

10

05

15
25

| | | |
|----------------------------------|--------------------------|----------------------|
| STUDENT'S NAME | Vaishnavi | TOTAL MARKS OBTAINED |
| CLASS: M.Sc II nd Sem | SUBJECT: Food technology | |
| ROLL NO: 13 | DATE: | |

IR 101
& Com. Science

Isolation and Analysis of Genomic DNA from E.coli

Isolation of Genomic DNA is one of the most important and common experiments that is carried out in molecular biology and includes the transition from cell biology to molecular biology. The most common method of isolating genomic DNA without the use of commercial kit by phenol / chloroform method.

Requirements :-

Reagents and chemicals : Tris base

proteinase K

phenol / chloroform (1:1)

200 proof ethanol, RNAase, Ethanol, SDS

EDTA, Tryptone, yeast Extract, NaCl,

LB medium (1% tryptone, 0.5% yeast

Extract, 200 mM NaCl), TE buffer (10mM

Tris-HCl (pH-8.0) 10mM EDTA (pH 8.0),

lysis buffer (10ml) (9.34 ml TE buffer,

60 μ l of 10% SDS, 60 μ l of proteinase

K (20mg/ml)

Equipment :- Table top centrifuge, 1.5ml Eppendorf tube, Incubator, Gloves.

Procedure :-

At first take about 1.5ml of E.coli overnight culture that was grown in LB medium and transfer it to a 1.5ml of

Eppendorf tube and then centrifuge at maximum possible speed of about 12000 rpm for extracting the cell pellet. Then discard the supernatant and resuspend pellet in about 600 microliter lysis buffer & completely vortex it for mixing it. Incubate it for about 1 hour at 70°C. Add an equal volume of phenol:chloroform and mix it till they are mixed properly. Then at maximum speed spin for about 5 min which will lead to formation of a white layer in the organic interface. Now very carefully transfer the aqueous phase to a new tube through a 1ml pipette. You can repeat above two steps till the white layer disappears. For removing the phenol take equal volume chloroform and add at maximum speed of about 5 min. Now transfer the aqueous layer to a new tube. For precipitation the DNA add about 2.5 ml cold ethanol & mix it properly. Precipitation may diffuse for that you can keep the tube at -20°C for about 30 min & then spin for about you will be able to see DNA pellet. Now spin for about 15 min at 4°C. Discard the supernatant & rinse the DNA pellet with 70% ethanol. Now again spin at maximum speed of about 2 min & discard the supernatant and wash the DNA pellet with 1ml of 70% ethanol. Now again spin at maximum speed. Now suspend the DNA in 100 µl of lysis buffer. Check genomic DNA on agarose gel.

| | | |
|-----------------|----------|-----------------------|
| STUDENT'S NAME: | | TOTAL MARKS OBTAINED: |
| CLASS: | SUBJECT: | |
| ROLL NO.: | DATE: | |

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/

Conclusion

It is very simple method of isolating genomic DNA.

Production of biomass from Fruit and Vegetable Waste ?

Waste from the food is a challenge to the environment all over the globe, there is a need to be recycled

Vegetable & fruit biomass is a resource of renewable energy with significant fuel source potential for the production of electricity and steam fuel for consumption & laboratory

Fruit wastes as a source of bioethanol

Fresh fruits are consumed or the citrus juice is mostly preserved which it is ready form of consumption or concⁿ form. After the extraction of citrus fruit juice, the remaining parts of the fruits serve as rich source of lignocellulosic material for the fermentation of bioethanol. Simultaneous saccharification of bioethanol and fermentation from plantain, banana & pineapple peel

Through the cultured of *S. cerevisiae* & *A. niger*. Different temp^r (20-50°C) was used to be examined the simultaneous saccharific action & fermentation of banana peels to obtain bioethanol using co-culture of *S. cerevisiae* and *A. niger* at different pH of 4 to 7 for seven days.



The present result study observed that the maximum temp and pH for the banana peels fermentation was 30°C with these maximum condition of temp & pH diff concⁿ 3 and 12% of yeast were utilized for the fermentation.

③ Demonstrate gel electrophoresis Tech

-> Gel electrophoresis is a technique used to separate DNA fragments according to their size. DNA sample are loaded into wells (Identification) at one end of a gel and an electric current is applied to pull them through the gel. DNA fragments are negatively charged, so they move towards the positive electrode.

In this manner DNA fragments in a solution are separated on the bases of size. There are several basic steps of forming gel electrophoresis that will be described below.

① pouring the gel.

pouring the gel in the electrophoresis tank. The tank may be vertical or horizontal.

② Preparing your sample

③ Loading the gel

Loading of the gel when they are in the electrophoresis and put the comb to create a well.

| | | |
|-----------------|----------|----------------------|
| STUDENT'S NAME: | | TOTAL MARKS OBTAINED |
| CLASS: | SUBJECT: | |
| ROLL NO.: | DATE: | |



Running the gel

Apply the electric current then flow the gel the separation starts the fragments of the DNA move towards the opposite electrode

2) Staining the gel

~~Stain the gel~~ so that visualize the moving DNA fragments across the gel.

~~Stain~~

Name: Anand

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Department of Biotechnology

Add-on Course on Food Biotechnology
Marks List (2021-22)

Class: M.Sc I & III sem(Batch-1)

| SL. No | Name of the student | Theory | Practical | Total |
|-----------------|---------------------|--------|-----------|-------|
| 1 | SAIKUMAR | 20 | 15 | 35 |
| 2 | SHRUTI | 16 | 13 | 29 |
| 3 | VAISHNAVI | 17 | 15 | 32 |
| 4 | ARTHI BIRADAR | 16 | 15 | 31 |
| 5 | SUPRIYA | 17 | 16 | 33 |
| 6 | JAGDISH | 21 | 17 | 38 |
| 7 | MAHESH | 17 | 16 | 33 |
| 8 | ANAND | 19 | 16 | 35 |
| 9 | SHREEKANTH | 21 | 16 | 37 |
| 10 | SNEHA | 15 | 15 | 30 |
| 11 | MADHU | 20 | 16 | 36 |
| 12 | SANGMESH | 15 | 13 | 28 |
| 13 | VIJAYKUMAR | 15 | 14 | 29 |
| 14 | SHIVANAND | 15 | 14 | 29 |
| 15 | AMAR MADGULE | 20 | 15 | 35 |
| 16 | ANKITA | 22 | 23 | 45 |
| 17 | RAHUL PATIL | 10 | 11 | 21 |
| 18 | AMITKUMAR | 20 | 15 | 35 |
| 19 | ASTHA | 20 | 19 | 39 |
| Sign of Faculty | | | | |

Invigilator Sign

HOD

HEAD

Dept. of Biotechnology
Karnatak Arts, Sci. & Com. Coll. Bidar
BIDAR-585401

Principal

PRINCIPAL

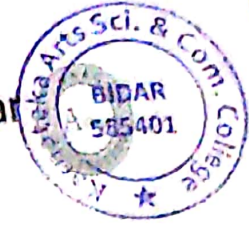
Karnatak Arts, Sci. & Com. College
BIDAR-585401

Name & Award



Karnatak Arts, Science & Commerce College, Bidar

ESTD. 1970
(Affiliated to Gulbarga University)
College With Potential for Excellence



Department of Biotechnology
Add-On Course on Food Biotechnology

REPORT

Name of the course: Food Biotechnology

Name of the BOS: Prasad Vanjari

Number of Students: 19

BOS Meeting Date: 07/01/2022

Start Date of course: 17/01/2022

End date of the course: 04/06/2022

Department of biotechnology conducted Add-on course on Food Biotechnology. Food biotechnology helps to students to understand food safety, sanitization, law, regulations, engineering and food packaging in industries. The student acquire basic knowledge of IPR as well as emerging techniques and advanced food engineering concepts. At the end of term we are conducting examination on Food Biotechnology and declared the result.