



Department of Microbiology
SRI SAI BABA NATIONAL DEGREE COLLEGE (A) :: ANANTAPUR

About Us

Department Profile:

The department of Microbiology was established in the year 1994. Our college is the first affiliated college of Sri Krishnadevaraya University, Anantapur to offer Microbiology as a self-funding course at the UG level with Biotechnology and Chemistry combination. At present the Department is offering B.Sc., with the following combinations.

- B. Sc 1. Microbiology- Biotechnology-Chemistry
2. Microbiology- Food Technology-Chemistry

The Department caters to the academic needs of about 250 students of I, II & III Year UG Courses. The students come both from rural and urban areas. The ratio of boys and girls is 30:70. The department is provided with a well-furnished staff room, two classrooms, two laboratories and one ICT classroom. Besides the regular lecture methods, the Department at present is also making use of computer, CDs related to subject topics, seminar hall for guest lectures, OHP, LCD Projector, magazines and journals for the purpose of widening the subject knowledge of the students.

The pass percentage of the students has been above 90 on an average. The progression of the students has also been excellent. The percentage of students who reach the universities is around 75 and those who reach the level of M.Phil., or Ph.D., is around 5. This is all because of the semester system and also the hard work of the teachers which enabled the students to be thorough with the prescribed syllabi and prepare well for internal tests and semester-end examinations. The department also constantly monitors the progress of the students by getting feedback from them with regard to the curriculum teaching-learning-evaluation.

Apart from the regular classroom teaching, use of computers and OHPs, encouraging the students to participate in group discussions, panel discussions and seminars along with teachers, are the healthy practices of the department. The students are advised to prepare charts and models. Simple science projects are assigned to students to improve their scientific temper. The faculty regularly conducts seminars, guest lectures, group discussions, quiz programmes for the benefit of the students. Remedial classes are conducted for the slow-learners identified by the faculty. It also involves students in basic research projects, takes them to research institutes as beyond syllabus scholarly activities.

The faculty and the students participate in extension activities such as Swatcha bharath programme, clean and green programmes, blood donation camps, plantation, awareness programmes regarding superstitions and diseases, AIDS awareness programmes ect. Some students of the department are actively engaged in NSS and NCC programmes. Mustaq Ahammed, 2008-2011 batch student of the department represented the college as an NSS volunteer at Pre-Republic Day Camp at Bhopal, Madhya Pradesh. Every year Faculty and students of Microbiology donate materials worth of Rs 10,000 either to old age homes or to Orphanages.

The alumni of the department have been serving in various state, central government and private organizations in such positions as administrators, lecturers, teachers, scientists, registrars and so on. They often come to the college and meet the present students and share their views with them with regard to the subject and institution. Some of the alumni also extend their help for the development of the department.

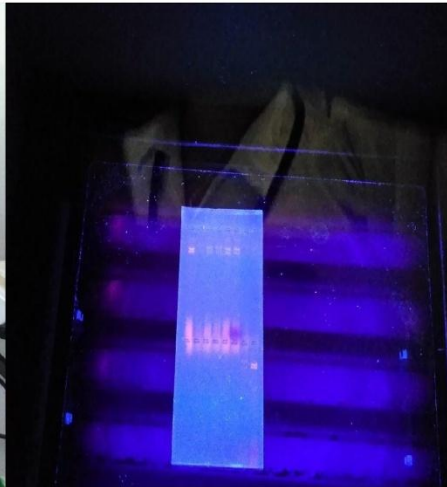
The department uses innovative methods of teaching as part of imparting quality education. It can boast of its well-equipped laboratories, good student progression and the supporting management. The department has been exposing its students to hand on experiments, guest lectures and interaction with eminent teachers from various colleges. It has some drawbacks such as not having permanent staff, the students not opting for the course as most of the students prefer to join professional courses after their intermediate.

The Department is offering a Certificate course on “Clinical Microbiology” for all Biology students, and Skill development courses such as 1.Introduction to Microbial world. 2. Human microbial disease management.3.Microbial inoculants technology, 4.Microbial fermentation technology (For non Microbiology students). The Department has Memorandums of understanding with 1) with Dept of Microbiology, Biotechnology & Botany, Govt Degree College, Anantapuram.2) Dept of Food Technology,OTRI, Anantapuram. 3)Agri Biotech foundation(ABF), Rajendranagar, Hyderabad. The Department has plans to strengthen by getting a PG course in Microbiology and to conduct certificate courses in Molecular and Genetic Engineering Techniques, Immunological Techniques and Mushroom cultivation.



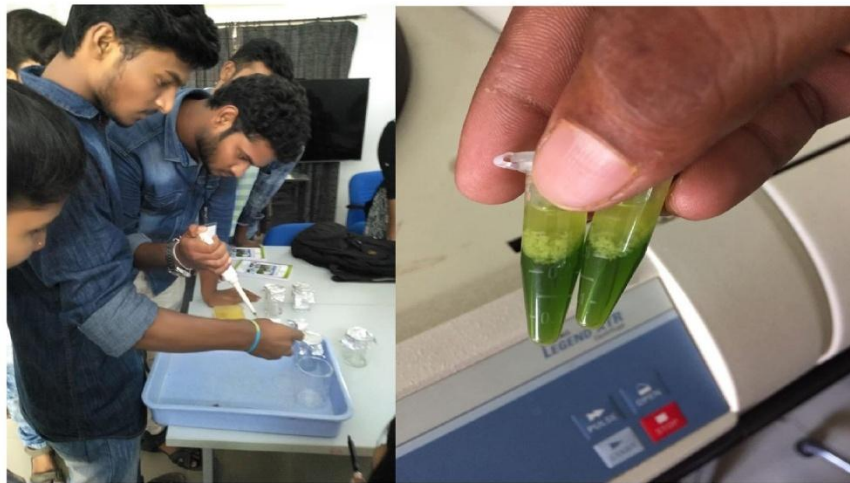






STUDENT TRAINING PROGRAMME

AGRI BIOTECH FOUNDATION- HYDERABAD



STUDENT TRAINING PROGRAMME

(Reddipalli Agricultural University)





Department of Microbiology
SRI SAI BABA NATIONAL DEGREE COLLEGE (A) :: ANANTAPUR

Faculty



The Department has two faculty members, Dr. G. Sairamalinga Reddy, Assistant Professor and Head, who has 28 years of teaching experience. He is a product of Sri Satya Sai Deemed University, Puttaparthi. He has participated and presented papers in various national and international seminars and workshops. He has to his credit 13 papers published in different national and international journals. He has also authored 4 chapters for text book **Introductory Microbiology** prescribed for I B. Sc published by the Telugu Academy, Government of A.P. He served as a member of the Board of Studies Microbiology, S.K. University, Anantapur, Silver Jubilee College (A), Kurnool, Osmania College, Kurnool and Government College (A), Anantapur. He served as Project adjudicator of M.Sc. Food Technology and Microbiology at Oil Technological Research Institute, JNTU, Anantapur. He also handled classes for M.Sc Biotechnology and Microbiology course. He was a Member of the committee appointed by the APSCHE, Hyderabad, for designing the Common core syllabus for undergraduate Microbiology course in A.P., 2008 -2011. He is the additional controller of examinations of the college.

Areas of Teaching

Microbial Techniques, Microbial Nutrition and Physiology, Microscopic Techniques, Enzymology, Molecular Biology, Microbial Genetics, Genetic Engineering, Soil and Agriculture Microbiology, Environmental Microbiology, Food Microbiology, Dairy Microbiology, Microbial Biotechnology and Immunology

Areas of Expertise

Microbial Techniques, Microbial Biotechnology, Molecular Biology and Immunology

CURRICULUM VITAE

Dr.G.Sai Ramalinga Reddy

S/O G.Thimma Reddy

12 - 2 - 812.

Nallapa Reddy Building

Sai Nagar

Anantapur –515001

Andhra Pradesh, INDIA.

E-mail : gangulasairam315@gmail.com

Mobile No: +91 - 9440396624

DESIGNATION : Assistant Professor, Microbiology.
S.S.B.N Degree & P.G College (Autonomous)
Anantapur - 515001

ACADEMIC PROFILE :

2010	Ph.D., in Microbiology Sri Krishnadevaraya University Anantapur, A .P. INDIA.	Title: Antimicrobial and antiapoptotic studies on Silkworm (<i>Bombyx mori</i> .L) with special reference to hemolymph, hemocytes and excreta.
2008	M.Phil in Microbiology First class, Vinayaka Mission University Salem Tamil Nadu, INDIA	Title: Isolation, Biochemical characterization and screening of Aromatic hydrocarbon – Benzene degrading <i>Pseudomonas putida</i> As 2103
1992	Master of Science (Bio - Sciences) ' O ' Grade (75%) Sri Sathya Sai Institute of Higher Learning Prasanthinilayam – 515134 Andhra Pradesh, INDIA.	Project in M.Sc. Title: Diagnosis and the effects of fluoride toxicity (NaF & KF)On Groundnut plant (<i>Arachis hypogea</i> L.)
1990	Bachelor of science (Bio - Sciences) ' A ' Grade (67%) Sri Sathya Sai Institute of Higher Learning Prasanthinilayam – 515134 Andhra Pradesh, INDIA.	

ACADEMIC EXPERIENCE:

COURSE TOUGHT	NAME OF COLLEGE	DURATION
B.Sc., Microbiology	S.S.B.N Degree & P.G College(Autonomous) Anantapur - 515001	28 years
B.Sc., Biotechnology	S.S.B.N Degree & P.G College(Autonomous) Anantapur - 515001	4 years
B.Sc., Food Technology	S.S.B.N Degree & P.G College(Autonomous) Anantapur - 515001	5 years
M.Sc., Microbiology	Acharya Nagarjuna University, Distance Education, Guntur	3 years
M.Sc., Biotechnology	S.S.B.N Degree & P.G College(Autonomous) Anantapur - 515001	5 year

Extension lectures for B.Sc., Microbiology & Biotechnology, in

- S.V. Degree & P.G College, Anantapur, INDIA (Affiliated to S.K.University)
- Sri Vani Degree & P.G College, Anantapur, INDIA (Affiliated to S.K.University)
- Nalanda Degree College, Anantapur, INDIA (Affiliated to S.K.University)

Computer proficiency:

- Computer packages: MS-Office 2000 (Word, Excel, PowerPoint).

PUBLICATIONS:

I. Books published : Contributed four chapters to the text book , “**INTRODUCTORY MICROBIOLOGY**” meant for **First B.Sc.**, (A.P Common core syllabus), Published by **Telugu Academy**.

II. Publications

1. **Sai Ramalinga Reddy, G., 2012.** “Effect of fatty acid in green leafy vegetable and vegetable oils on bioavailability of β -carotene in vitro. *Current Biotica*. 5(3): 270-281.
2. **Sai Ramalinga Reddy, G.,** Subramanyam, K. and Rajasekhar, P. 2012 “Isolation, screening and identification of Benzene degrading Bacterium, *Pseudomonas putida*”, *Asian Journal of Biological and Life Sciences*. Manuscript No: AJBLS-019-2012.
3. **Sai Ramalinga Reddy, G.,** Subramanyam,K. and Rajasekhar,P. 2012. “*Pseudomonas putida* strain SNIST 16S ribosomal RNA gene”, partial sequence. GI: 375281962 (Web submission/Database submission)

4. **Sai Ramalinga Reddy,G.,**Venkatappa,B., Jayanna naik,B.,Jayasimha Rayalu.D., “Antimicrobial studies on silkworm (*Bombyx mori.L*) with special refference to hemolymph and haemocytes”, International Journal of Analytical, Pharmaceutical, and Biomedical sciences. IJABPS, Vol-1, Issue 1-2012.
5. **Sai Ramalinga Reddy,G.,**Venkatappa,B.,Jayasimha Rayalu.D.,. “Role of Prophenoloxidase (ProPO) in silkworm Immunity- Determination of Phenol Oxidase (PO) activity”. International Journal of Plant, Animal and Environmental sciences. IJPAES, Vol -2, Issue-2-2012.
6. Jayasimha Rayalu.D., Mohammad mohsen Honarpisheh.,**Sai Ramalinga Reddy.G.,** Janardhan.P.B.,” Molecular modeling and drug designing of caspase associated ring protein 2 involved in cancer”. Journal of Advanced Bioinformatics Applications and Research. Vol 2, Issue 4, 2011, pp 223-234.
7. **Sai Ramalinga Reddy.G.,** B.V.Ramana Naidu.B.V., .Suneetha. B., Seshapani. P., Pramoda kumari.J., Jayasimha Rayalu.D.,”Homology modeling and drug designing of 18kda antigen in *mycobacterium leprae*”. International Journal of Applied biology and Pharmaceutical technology. **Volume: 2: Issue-4: Oct - Dec -2011.**
8. Rajasekhar Pinnamaneni, **Sai Ramalinga Reddy Gangula,** Subramanyam koonaa. ”Isolation, Screening and assaying of methioninase of *Brevibacterium linens*” International journal of Science and nature. Vol 3 (4) 2012.
9. **Gangula Sai Ramalinga Reddy,** Md Rafi “Isolation and characterization of a bacterial strain for benzene degradation” Global Journal of Bio- science & Biotechnology.Vol 1(2) 2012.
10. Anuradha Laishram., Jayanna Naik, **Sairamalinga Reddy,** D.Jayasimha Rayalu “Phytochemical analysis,TLC proiling and antimicrobial activity of *Tephrosia purpurea*” International journal of pharmacy and Life Science.
11. **Gangula Sai Ramalinga Reddy,** “Analysis Of Antibiotic Resistant Genes In Bacteria”, International Journal of Analytical, Pharmaceutical & Biomedical Sciences Volume: 3: Issue-3: July-Sept-2014.
12. **Sai Ramalinga Reddy G,** “Phytochemical Screening And Antimicrobial Studies Of Phyllanthus Emblica”, International Journal of advanced scientific technologies, engineering and management science(IJASTEMS) ISSN 2454- 356X
13. **Sai Ramalinga Reddy G,** “Impact of ICT In Teaching And Learning”, International Journal of advanced scientific technologies, engineering and management science (IJASTEMS) ISSN 2454- 356X

III. REFRESHER COURSE ATTENDED:

1. Attended a refresher course in “**PLANT BIOTECHNOLOGY** “conducted by Sri Krishnadevaraya University, Anantapur from 19 -1-2004 to 08- 02- 2004.

IV. WORKSHOPS / CONFERENCES/ SEMINARS ATTENDED:

1. Participated in the national workshop on” **IMMUNOBIOLOGY & ANIMAL CELL CULTURE TECHNIQUES**” conducted by Sri Krishnadevaraya University, Anantapur from May 20 – 22, 2002.
2. Participated in the national symposium on “**RECENT TRENDS IN PLANT SCIENCES**” conducted by Sri Krishnadevaraya University, Anantapur from October 29 – 31, 2004.
3. Participated in the national seminar on “**RECENT TRENDS IN BIOTECHNOLOGY**” conducted by S.S.B.N Degree (Autonomous) & P.G College, Anantapur on 3 - 12 - 2006.
4. Participated in the national symposium on “**CURRENT TRENDS IN BIOLOGICAL CHEMISTRY**” conducted by Sri Krishnadevaraya University, Anantapur from December 17 – 18, 2006.
5. Participated in the national seminar on “**CHALLENGES IN LIFE SCIENCES IN RECENT ERA**” conducted by S.S.B.N Degree (Autonomous) & P.G College, Anantapur on 29 - 2 – 2008.
6. Participated in the workshop on “**APPLICATIONS OF PCR TECHNOLOGY IN MOLECULAR DIAGNOSTICS**” conducted by ONAN biotech Pvt.Ltd, Hyderabad, in association with S.S.B.N Degree (Autonomous) & P.G College, Anantapur on 26-2-2010.
7. Participated in the national workshop on” **RADIO CHEMISTRY & APPLICATIONS OF RADIO ISOTOPES**” conducted by S.S.B.N Degree (Autonomous) & P.G College, Anantapur on 23-10-2011.
8. Participated in the national seminar on “**APPLICATION OF MICROBES IN MANAGEMENT OF AGRICULTURE AND ENVIRONMENT (AMMAE)**” conducted by Sri Krishnadevaraya University, Anantapur from March 4 - 6, 2011.
9. Participated in the 80th BRNS-IANCAS national work shop on “**RADIO CHEMISTRY AND APPLICATIONS OF RADIOISOTO** conducted by Department of Chemistry, SSBN degree & P.G College, Anantapur, from November 5 -10-2012.

10. Participated in the national seminar on “ADVANCED IMMUNOLOGY AND IMMUNOMODULATION conducted by Sri Krishnadevaraya University, Anantapur from March26-28, 2012.
11. Participated in Three day Training program on RECENT TECHNIQUES IN MOLECULAR MICROBIOLOGY, organized by Agri Biotech Foundation (ABF), Hyderabad on 1st to 3rd September 2016
12. Participated in two day national conference on ICT EMPOWERED TEACHING, LEARNING AND EVALUATION organized by IQAC, SSBN Degree College, Anantapur on 16th & 17th December 2016
13. Organized debate on ROLE OF MICROBES IN AGRICULTURE sponsored by Agri Biotech Foundation (ABF), Hyderabad on 25-01-2017
14. Participated in one day training programme on RECENT TECHNIQUES IN MOLECULAR BIOTECHNOLOGY organized by Agri Biotech Foundation (ABF), ANGRAU at agriculture research campus, Reddipalli on 06-09-2017.
15. Participated in two day science academics lecture workshop on NEW VISTAS IN BIOLOGY sponsored by joint science education panel, organized by SSBN Degree College on 25th & 26th July 2018.
16. Participated in two day training program on RECENT TECHNIQUES IN MOLECULAR BIOLOGY organized by Agri Biotech Foundation (ABF), ANGRAU at agriculture research campus, Reddipalli on 19th & 20th September, 2019.
17. Organized one day work shop on “NEXT GENERATION OF YOUNG AGRIPRENEUR” Sponsored by Agri Biotech Foundation (ABF),Hyderabad on 18-12-2019.
18. Participated in UGC sponsored one day workshop on NON-COMMUNICABLE DISEASES organized by Red Ribbon Club, SSBN degree college, Anantapur on 26-02-2020.
19. Participated in UGC Sponsored two day national seminar on EMERGING MATERIALS AND APPLICATIONS organized by SSBN Degree College, Anantapur on 11th and 12th March 2020.
20. Participated in UGC Sponsored one day national seminar on NEW PARADIGM SHIFT IN DRUG DISCOVERY AND BIOPHARMACEUTICALS ON 21ST CENTURY organized by SSBN Degree College, Anantapur on 14th March 2020.

V. CONTRIBUTION TO CURRICULUM DEVELOPMENT:-

1. A Member of the committee appointed by the APSCHE, Hyderabad, for Designing the Common core syllabus for undergraduate Microbiology course in A.P., 2008 -2011.
2. Chairman, Board of Studies for U.G. Microbiology Course S.K.University, Anantapur, 2007.
3. Member, Board of Studies for U.G. Microbiology Course, S.K.University, Anantapur, 2005-2007.
4. Member, Board of Studies for U.G. Microbiology Course, S.S.B.N Degree & P.G. College (Autonomous), Anantapur, 2005 onwards.
5. Chairman, Board of Studies for U.G. Microbiology Course S.S.B.N Degree & P.G. College (Autonomous), Anantapur, 2011 onwards.
6. Chairman, Board of Studies for U.G. Food Technology Course S.S.B.N Degree & P.G. College (Autonomous), Anantapur, 2018 onwards.
7. Member, Board of Studies for U.G.Course Silver jubilee Degree College (Autonomous) Kurnool. 2009 to 2012.
8. Student project evaluator OTRI – JNTU- Anantapur.2005 – 2008
9. Question paper setter for U.G. Microbiology & Biotechnology courses for Silver jubilee Degree College (Autonomous), Osmania Degree College (Autonomous), Kurnool, Acharya Nagarjuna university, Guntour, Yogi Vemana University, Kadapa and Sri Venkateswara University, Tirupati

VI. SERVED AS

1. Member, Library development committee, S.S.B N Degree & P.G. College (Autonomous), Anantapur.
2. Member, Sports & Games committee, S.S.B N Degree & P.G. College (Autonomous), Anantapur.
3. Member, N.S.S. committee S.S.B N Degree & P.G. College (Autonomous), Anantapur.
4. Member, Appeals & Grievances committee, Seminar organizing committee, Alumni committee. S.S.B N Degree & P.G.College (Autonomous)., Anantapur.

VIII. ADDITIONAL RESPONSIBILITIES

1. As an additional controller of examinations
2. Member appeals and Grievances Committee, Seminar Organizing Committee and Disciplinary Committee

Smt. C. Manjuvani, Assistant professor, with 10 years experience. She is specialized in teaching Analytical Techniques and Medical Microbiology. She has participated in various national and international seminars and workshops. She worked as a research associate in ABF, Rajendra Nagar, Hyderabad.



CURRICULUM VITAE

C. Manju Vani,
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Aravinda Nagar
Anantapur
Andhra Pradesh- 515001

E-mail: c.manjuvanimsc@gmail.com
Phone: +91-9177251767.

DESIGNATION : Assistant Professor, Microbiology.
S.S.B.N Degree & P.G College (Autonomous)
Anantapur - 515001

ACADEMIC PROFILE :

2007-2009	Master of Science (Biochemistry), 67% Sri Venkateswara University, Tirupati, Andhra Pradesh, INDIA.
2009-2010	Bachelor of Education (Biological sciences), 58% Sri Krishnadevaraya University, Anantapur, Andhra Pradesh, INDIA.

ACADEMIC EXPERIENCE:

COURSE TOUGHT	NAME OF COLLEGE	DURATION
B.Sc., Microbiology	S.S.B.N Degree & P.G College(Autonomous) Anantapur - 515001	9 years
B.Sc., Food Technology	S.S.B.N Degree & P.G College(Autonomous) Anantapur - 515001	5 years
B.Sc., Biochemistry	Jawaharlal Nehru Technological University OTRI, Anantapur - 515001	1 year
B.Sc., Biochemistry	CVLNR Degree College Anantapur- 515001.	1 year
M.Sc., Biotechnology	S.S.B.N Degree & P.G College(Autonomous) Anantapur - 515001	1 year

RESEARCH EXPERIENCE:

- ❖ Worked as **Research Associate** in **Agri-Biotech Foundation**, Rajendra Nagar, Hyderabad

ACHIEVEMENTS

1. Participated in the Inter-collegiate youth festival 2005 in **SKU** and Secured 1st prize in group song (Indian).
2. Participated in the inter-collegiate youth festival 2006 in **SKU** and secured 2nd prize in poetry in English.
3. Participated in the inter-university south zone youth festival 2005-2006 held at **SIR MVIT**, Belgaum in Bangalore.
4. Participated in the 76th annual meeting of society of biological chemist's India during November 25th to November 27th of 2007 in SVU
5. Participated in the Open house and exhibition event held during august 23-27th in SVU.

COMPUTER SKILLS

1. Tools : MS. Office
2. Operating Systems : Windows XP, 7, Vista

SUBJECTS HANDLED IN MASTER DEGREE

1. Molecular physiology and Endocrinology
2. Microbiology and Molecular Genetics
3. Immunology

WEBINARS ATTENDED:

1. Participated in “5 DAY FACULTY DEVELOPMENT PROGRAM IN LMS video and pedagogy” organized by Commissionerate of Collegiate Education, Vijayawada, AP from 3rd to 7th August, 2020
2. Participated in one day international e-webinar on “BIOMEDICAL PRODUCT DEVELOPMENT - OPPORTUNITIES AND CHALLENGES” organized by Government Degree College, Pithapuram on 4th September 2020
3. Participated in “5 DAY FACULTY DEVELOPMENT PROGRAM IN BIOSCIENCES” organized by Commissionerate of Collegiate Education, Vijayawada, AP from 7th to 11th September, 2020.
4. Participated in two day international e-webinar on “RECENT TRENDS IN LIFE SCIENCES FOR BETTER FUTURE (RTLFBF) -2020 ” organized by Digambarrao Bindu Arts, Commerce & science College, Bhokar (D), Nanded, Maharashtra on 15th & 16th September 2020.
5. Participated in one day international e-webinar on “COVID 19: CURRENT STATUS OF VACCINE DEVELOPMENT AND IMMUNIZATION” organized by Mangalore university and Microbiologists Society, India (MSI), Karnataka on 30th September 2020.

WORKSHOPS / CONFERENCES/ SEMINARS ATTENDED:

1. Participated in the event on "OPEN HOUSE AND EXHIBITION" conducted by College of Biological and earth Sciences, Sri Venkateswara University, Tirupati from August 23rd to 27th, 2007.
2. Participated in Three day Training program on RECENT TECHNIQUES IN MOLECULAR MICROBIOLOGY, organized by Agri Biotech Foundation (ABF), Hyderabad on 1st to 3rd September 2016.
3. Participated in two day national conference on ICT EMPOWERED TEACHING, LEARNING AND EVALUATION organized by IQAC, SSBN Degree College, Anantapur on 16th & 17th December 2016.
4. Participated debate on ROLE OF MICROBES IN AGRICULTURE sponsored by Agri Biotech Foundation (ABF), Hyderabad on 25-01-2017.
5. Participated in one day training programme on RECENT TECHNIQUES IN MOLECULAR BIOTECHNOLOGY organized by Agri Biotech Foundation (ABF), ANGRAU at agriculture research campus, Reddipalli on 06-09-2017.
6. Participated in UGC sponsored a two day "NATIONAL WORKSHOP ON WOMEN ENTREPRENEURSHIP (NWE-2017)" organized by Women Empowerment Cell (WEC), SSBN Degree College, Anantapur on 22nd & 23rd December 2017
7. Participated in two day science academics lecture workshop on NEW VISTAS IN BIOLOGY sponsored by joint science education panel, organized by SSBN Degree College on 25th & 26th July 2018.
8. Participated in UGC sponsored "BOOT CAMP ON LEADERSHIP DEVELOPMENT FOR WOMEN" organized by Women Empowerment Cell (WEC), SSBN Degree College, Anantapur on 20th & 21st February 2019.
9. Participated in workshop on "PERSONALITY DEVELOPMENT AND WOMEN EMPOWERMENT" organized by Women Empowerment Cell (WEC), SSBN Degree College, Anantapur on 22nd august 2019.
10. Participated in two day training program on RECENT TECHNIQUES IN MOLECULAR BIOLOGY organized by Agri Biotech Foundation (ABF), ANGRAU at agriculture research campus, Reddipalli on 19th & 20th September, 2019.
11. Organized one day work shop on "NEXT GENERATION OF YOUNG AGRIPRENEUR" Sponsored by Agri Biotech Foundation (ABF),Hyderabad on 18-12-2019.

12. Participated in UGC sponsored one day workshop on NON-COMMUNICABLE DISEASES organized by Red Ribbon Club, SSBN degree college, Anantapur on 26-02-2020.
13. Participated in UGC sponsored a two day workshop on “SELF EMPLOYMENT OPPORTUNITIES FOR WOMEN” organized by Women Empowerment Cell (WEC), SSBN Degree College, Anantapur on 5th & 6th March 2020.
14. Participated in UGC Sponsored two day national seminar on EMERGING MATERIALS AND APPLICATIONS organized by SSBN Degree College, Anantapur on 11th and 12th March 2020.
15. Participated in UGC Sponsored one day national seminar on NEW PARADIGM SHIFT IN DRUG DISCOVERY AND BIOPHARMACEUTICALS ON 21ST CENTURY organized by SSBN Degree College, Anantapur on 14th March 2020.

Technical Support/ Non-teaching Staff:



Smt. B. Rama Devi
Attender



Department of Microbiology
SRI SAI BABA NATIONAL DEGREE COLLEGE (A) :: ANANTAPUR

Student Zone:

B. Sc Microbiology Course Structure under CBCS

Year	Semester	Course	Title of the Course	Marks	No. of hrs per week	No. of Credits
I	I	I	Introductory Microbiology and Microbial Techniques	100	4	3
			Lab Course - I	50	2	2
	II	II	Microbial Physiology, Biochemistry and Analytical Techniques	100	4	3
			Lab Course - II	50	2	2
II	III	III	Molecular Biology, Microbial Genetics & Genetic Engineering	100	4	3
			Lab Course - III	50	2	2
	IV	IV	Immunology and Medical Microbiology	100	4	3
			Lab Course – IV	50	2	2
	IV	V	Food and Industrial Microbiology	100	4	3
			Lab Course - V	50	2	2



S S B N DEGREE COLLEGE (AUTONOMOUS) :: ANANTAPUR

B. SC. MICROBIOLOGY SYLLABUS UNDER CBCS

[2020-2021 Batch onwards]

I Year B. Sc Microbiology : I Semester

Course I: Introductory Microbiology and Microbial Techniques

Work load: 60 hrs per semester]

[4 hrs/week

UNIT-1 Introduction to Microbiology:

- Definition of microbiology, Discovery of Microorganisms.
- Spontaneous generation (Abiogenesis) and Biogenesis.
- Contributions of Antony von Leeuwenhoek, Edward Jenner, Louis Pasteur, Robert Koch, Iwanowsky and Alexander Fleming.
- Germ theory of fermentation and Germ theory of disease.

UNIT-2 Classification and General Characteristics of Microorganisms:

- Classification of Microorganisms- Haeckel's three kingdom, Concept of Whittaker's five kingdom and Concept of Carl wose.
- General characters of Prokaryotes (Cyanobacteria, Actinomycetes, and Archaeobacteria).
- General characters of Eukaryotes-Algae, Fungi (Moulds and Yeast) and Protozoa.
- Discovery and the nature of viruses, Physical and biochemical properties of Viruses, General characters, Morphology and Life cycle of TMV And lambda (λ). Bacteriophage.

UNIT -3 Bacteria and bacterial staining:

- Ultra structure of bacterial cell- Invariant components (Cell wall, Cell membrane, Ribosomes and Nucleoid)
- Variant components (Capsule, Flagella, Fimbriae, Endospore and Storage granules).
- Staining techniques: Simple staining, Differential staining (Gram staining & Acid fast staining) and Structural staining (Spore and Capsule).

UNIT-4 Microbial Techniques:

a) Sterilization and Disinfection techniques

- Physical methods – Heat: Moist heat (Autoclave) Dry heat (Hot air oven).
- Radiation methods – U.V rays- X-rays and Gamma rays.
- Filter sterilization (Depth filters & membrane filters), Laminar air flow.
- Chemical sterilization-Use of alcohols, Phenols, Halogens, Salts of heavy metals Aldehydes, Fumigants.

b) Isolation and pure culture Techniques

- Dilution plating, Streak plate, Spread plate and Pour plate technique.
- Preservation of microbial culture-(Sub culturing, overlaying culture with mineral oil, Sand culture, Storage at low temperature and Lyophilization).

UNIT -5 Growth Medias:

Essential components of Microbial medium

- Composition & uses of Natural, Synthetic and semi synthetic media.
- Basal media and Special media (Enriched, Enrichment, Selective, Differential and Transport media).

RECOMENDED BOOKS:

- Prescott, M.J., Harley, J.P. and Klein, D.A. (2002). Microbiology. 5th Edition, WCB-Mc Graw-Hill, New York.
- Madigan, M.T., Martinkl, J.M. and Parker, J. (2000). Brock Biology of Microorganisms, 9th Edition, MacMillan Press, England.
- Stanier, R.Y., Adelberg, E.A. and Ingram, J.L. (1991). General Microbiology, 5th Ed., Prentice Hall of India Pvt. Ltd., New Delhi.
- Pelczar, M.J., Chan, E.C.S. and Kreig, N.R. (1993). Microbiology. 5th Edition, Tata McGraw Hill Publishing Co., Ltd., New Delhi.
- Rao, A.S. (1997). Introduction to Microbiology. Prentice-Hall of India Pvt Ltd., Nerw Delhi.

Lab Course-1

Introductory Microbiology and Microbial Techniques

1. Demonstration of sterilization methods (use of autoclave, hot air oven, laminar air flow chamber)
2. Preparation of media (Nutrient agar media, McCone agar media, Eosin methylene blue agar media Czapeckdox agar media)
3. Preparation of Broth (Nutrient broth , LB broth)
4. Isolation of Bacteria from soil by serial dilution method.
5. Isolation of Bacteria by Streak plate, Spread plate, & Pour plate method.
6. Staining techniques... Simple (Positive & Negative).
7. Differential staining techniques (gram staining and acid fast staining,).
8. Microscope & its handling, observation of microscopic objects (low power, high power & oil immersion lens).
9. Observation of permanent slides of Eukaryotes & Prokaryotes.



S S B N DEGREE COLLEGE (AUTONOMOUS) :: ANANTAPUR

B. SC. MICROBIOLOGY SYLLABUS UNDER CBCS

[2020-2021 Batch onwards]

I Year B. Sc Microbiology : II Semester

Course II: Microbial Physiology, Biochemistry and Analytical Techniques

Work load: 60 hrs per semester]

[4 hrs/week

UNIT -1 Bacterial growth and Nutrition:

- Bacterial Growth:
 - ❖ Different phases of Bacterial Growth in Batch culture.
 - ❖ Factors influencing Bacterial growth.
 - ❖ Synchronous growth.
 - ❖ Continuous growth.
 - ❖ Biphasic growth.
 - ❖ Methods of measuring bacterial growth.
- Microbial Nutrition:
 - ❖ Nutritional requirements of bacteria (Macroelements, Microelements & Growth Factors).
 - ❖ Nutritional groups of bacteria (autotrophs, heterotrophs, mixotrophs & methylotrophs).

UNIT-2 Microbial Metabolisms:

- Aerobic respiration :
 - ❖ Glycolysis,
 - ❖ ED pathway
 - ❖ HMP pathway
 - ❖ TCA cycle
 - ❖ Electron transport system
 - ❖ Oxidative and substrate-level phosphorylation.
- Anaerobic respiration – Nitrate & Sulphate respiration.
- Fermentation –. Microbial fermentations with special reference to alcohol & lactic acid fermentations.

UNIT-3 Biomolecules:

- Carbohydrates: General characteristics, structure and Outline classification of carbohydrates
 - ❖ Monosaccharides : Glucose and Fructose.
 - ❖ Disaccharides: Sucrose and Lactose.
 - ❖ Polysaccharides: Starch and Cellulose.
- Amino acids: Classification, structure and properties.
- Proteins: structure (primary, secondary & tertiary structure) and properties.

- Nucleic acids: Structure of DNA (Watson & Crick model), Types of RNA and their structure.

UNIT- 4 ENZYMOLOGY:

- Enzymes – Chemical nature, properties, classification & nomenclature of enzymes.
 - ❖ Factors affecting catalytic activity of enzymes (temperature, pH, Concentration of substrate & concentration of enzymes).
 - ❖ Inhibition of enzyme activity - competitive, noncompetitive, uncompetitive and allosteric inhibition.

UNIT-5 Microscopy and Analytical Techniques:

- Microscopy:
 - ❖ Principles and Applications of Bright field Microscope.
 - ❖ Principles and Applications of Electron (SEM and TEM) microscope.
- Analytical Techniques:
 - ❖ Centrifugation- Principles & applications of differential and density gradient Centrifugation.
 - ❖ Chromatography - Principle and Applications of Paper and TLC.
 - ❖ Electrophoresis - Principle and Applications of Agarose and SDS-PAGE.
 - ❖ Colorimetry –Principle and applications.
 - ❖ U.V Visible Spectrophotometry- Principle and applications.

RECOMENDED BOOKS:

- Godchild, G. (1986). **Bacterial Metabolism**, Springer-Verlag, New-York.
- Caldwell, D.R. (1995). **Microbial Physiology and Metabolism**, W.C. Brown Publications, Iowa, USA.
- Moat, A.G. and Foster, J.W. (1995). **Microbial Physiology**, John-Wiley, New York.
- White, D. (1995). **The Physiology and Biochemistry of Prokaryotes**, Oxford University Press, New York.
- Reddy, S.R. and Reddy, S.M. (2004). **Microbial Physiology**, Scientific Publishers, Jodhpur, India.
- Reddy, S.M. and Reddy, S.R. (2005). **A Text Book of Microbiology Vol-II. Microbial Metabolism and Molecular Biology**. Himalaya Publishing House, Mumbai.
- Reddy, S.R. and Reddy, K.R. (2006). **A Text Book of Microbiology - Immunology and Medical Microbiology**, Himalaya Publishing House, Mumbai.
- Lehninger, A.L., Nelson, D.L. and Cox, M.M. (1993). **Principles of Biochemistry**, 2nd Edition, CBS Publishers and Distributors, New Delhi.
- Elliot, W.H. and Elliot, D.C. (2001). **Biochemistry and Molecular Biology**, 2nd Edition, Oxford University Press, U.S.A.

Lab course – II

Microbial Physiology, Biomolecules and Analytical Techniques

1. Preparation of media for culturing autotrophic and heterotrophic microorganisms.
2. Effect of carbohydrates, pH, temperature and salts on bacterial growth..
3. Qualitative analysis of sugars (any two).
4. Qualitative analysis of amino acids (any two).
5. Starch hydrolysis.
6. Catalase test.
7. Sugar fermentation test.
8. Separation of aminoacids by using paper chromatography.
9. Estimation of sugar by nelson and Somaji's method



S S B N DEGREE COLLEGE (AUTONOMOUS) :: ANANTAPUR

B. SC. MICROBIOLOGY SYLLABUS UNDER CBCS

[2021-2022 Batch onwards]

II Year B. Sc Microbiology : III Semester

Course-III: Molecular Biology, Microbial Genetics & Genetic Engineering

Work load: 60 hrs per semester]

[4 hrs/week

UNIT -I Molecular biology:

- DNA and RNA as genetic material.
- Replication of DNA – Semi conservative mechanism.
- Outlines of DNA damage and repair mechanisms
- Gene mutations: Historical background, base pair changes, frame shifts, deletions, & insertions.
- Spontaneous and induced mutations (Various physical and chemical mutagens).

UNIT -II

- Transcription in prokaryotes:
 - ❖ Enzymes and proteins involved in transcription.
 - ❖ Elements involved in transcription.
 - ❖ Mechanism of transcription.
- Genetic code.
- Translation in prokaryotes:
 - ❖ Structure of ribosomes.
 - ❖ Protein factors & enzymes involved in translation.
 - ❖ Charging of tRNA.
 - ❖ Mechanism of translation.
- Regulation of gene expression in bacteria
 - ❖ *lac* operon (Negative & positive regulation)

UNIT –III Microbial Genetics:

- Modern concept of gene
 - ❖ Muton, recon and cistron.
 - ❖ One gene- one polypeptide, one gene- one enzyme and one gene-one product hypothesis.
- Extra chromosomal genetic elements
 - ❖ Plasmids & Transposons.
- Brief account on gene transfer mechanism in bacteria
 - ❖ Transformation.
 - ❖ Conjugation
 - ❖ Transduction (generalized & specialized).

UNIT –IV Genetic Engineering:

- Basic principles of genetic engineering –
 - ❖ Restriction endonucleases (properties, uses, classification & nomenclature).
 - ❖ DNA Polymerases.
 - ❖ Ligases.
- Vectors
 - ❖ Plasmids,
 - ❖ Bacteriophages.
 - ❖ Cosmids.
- Outlines of gene cloning methods.

UNIT – V

- Genomic and cDNA libraries.
- Sequencing methods of DNA.
 - ❖ Sangers dideoxy method.
 - ❖ Maxam & Gilberts methods.
- Amplification of DNA (PCR).
- General account on application of genetic engineering in agriculture,medicine & Industry.

Recommended books:

- Elliot, W.H. and Elliot, D.C. (2001). Biochemistry and Molecular Biology, 2nd Edition, Oxford University Press, U.S.A.
- Freifelder, D. (1997). Essentials of Molecular Biology. Narosa Publishing House, New Delhi.
- Crueger, W. and Crueger, A. (2000). Biotechnology: A Text Book of Industrial Microbiology, Prentice-Hall of India Pvt. Ltd., New Delhi.
- Glick, B.P. and Pasternack, J. (1998). Molecular Biotechnology, ASM Press, Washington D.C.
- Freifelder, D. (1990). Microbial Genetics. Narosa Publishing House, New Delhi.
- Strickberger, M.W. (1967). Genetics. Oxford & IBH, New Delhi.
- Sinnott E.W., L.C. Dunn and T. Dobzhansky. (1958). Principles of Genetics. 5th Edition. McGraw Hill, New York.
- Glazer, A.N. and Nikaido, H. (1995). Microbial Biotechnology – Fundamentals of Applied Microbiology, W.H. Freeman and company, New York.
- Old, R.W. and Primrose, S.B. (1994) Principles of Gene Manipulation, Blackwell Science Publication.
- Smith, J.E. (1996). Biotechnology, Cambridge University Press.
- Snyder, L. and Champness, W. (1997). Molecular Genetics of Bacteria. ASM press, USA.
- Maloy, S.R., Cronan, J.E. and Freifelder, D. (1994). Microbial Genetics, Jones and Bartlett Publishers, London.
- Lewin, B. (2000). Genes VIII, Oxford University Press, England

LAB COURSE- III

Molecular Biology, Microbial Genetics & Genetic Engineering

1. Estimation of DNA by using UV Spectrophotmeter.
2. Estimation DNA by diphenylamine method.
3. Estimation of proteins by Biuret method.
4. Estimation of RNA by orisinol method.
5. Isolation of genomic DNA from E.coli.
6. Separation of genomic DNA.
7. Problems related to molecular biology



S S B N DEGREE COLLEGE (AUTONOMOUS) :: ANANTAPUR

B. SC. MICROBIOLOGY SYLLABUS UNDER CBCS

[2021-2022 Batch onwards]

II Year B. Sc Microbiology : IV Semester

Course – IV: Immunology and Medical Microbiology

Work load: 60 hrs per semester]

[4 hrs/week

UNIT-I: Types of immunity and components of immune system:

- Types of Immunity
 - Types of Immunity (Innate & Acquired Immunity).
 - Difference between Passive & Active immunity.
 - Humoral & Cell mediated Immunity
 - Primary and Secondary Immune response
- Organs of Immune Systems:
 - Primary Organs of Immune Systems (Thymus, Bursa of fabricius & Bone marrow)
 - Secondary organs of Immune system (Spleen & Lymph nodes).
- Cells of Immune systems:
B-lymphocytes, T-lymphocytes, null cells, monocytes, macrophages, neutrophils, basophils and eosinophils.

UNIT- II: Antigens, Antibodies and antigen- antibody interactions

- Antigens
Types, chemical nature, antigenic determinants, and factors affecting antigenicity.haptens.
- Antibodies
 - Structure, types, properties, and functions of Immunoglobulins.
 - Production and applications of Monoclonal antibodies.
- Types of antigen-antibody reactions
 - Agglutination,
 - Precipitation
 - Complement fixation.
- Labeled Antibody based Techniques
 - ELISA
 - RIA.

Unit- III: Hypersensitivity reactions

- Different types of hypersensitivity reactions
- Autoimmunity & Autoimmune diseases.
- Vaccines (definition, types of vaccines)
Recombinant vaccines, DNA vaccines.
- Immunization (Active and Passive immunization).

Unit- IV: Introduction to Medical microbiology

- History of Medical microbiology.
- Definitions - infection, invasion, pathogen, pathogenicity, toxigenicity
- Importance of normal microflora of human body
- Host pathogen interactions
- virulence and attenuation.
- Bacterial toxins.

Unit- V: Microbial Diseases

- General account on following microbial diseases (causative agent, mode of transmission, pathogenesis, Symptoms, diagnosis, control and prophylaxis).

Air borne diseases	:	Tuberculosis & CoVid - 19.
Food & water borne diseases	:	Typhoid & Ameobiosis.
Insect borne diseases	:	Malaria & Dengue fever.
Contagious borne diseases	:	Candidiasis.
Zoonotic diseases	:	Rabies.

Recommended books:

- Ananthanarayan R. and Paniker C.K.J. (2009) Textbook of Microbiology. 8th edition, University, Press Publication.
- Abbas AK, Lichtman AH, Pillai S. (2007). Cellular and Molecular Immunology. 6th edition Saunders Publication, Philadelphia.
- Delves P, Martin S, Burton D, Roitt IM. (2006). Roitt's Essential Immunology. 11th edition Wiley-Blackwell Scientific Publication, Oxford.
- Goldsby RA, Kindt TJ, Osborne BA. (2007). Kuby's Immunology. 6th edition W.H. Freeman and Company, New York.
- Richard C and Geiffrey S. (2009). Immunology. 6th edition. Wiley Blackwell Publication.
- Brooks G.F., Carroll K.C., Butel J.S., Morse S.A. and Mietzner, T.A. (2013) Jawetz, Melnick and Adelberg's Medical Microbiology. 26th edition. McGraw Hill Publication.
- Goering R., Dockrell H., Zuckerman M. and Wakelin D. (2007) Mims' Medical Microbiology. 4th edition. Elsevier.
- Willey JM, Sherwood LM, and Woolverton CJ. (2013) Prescott, Harley and Klein's Microbiology. 9th edition. McGraw Hill Higher Education.
- Madigan MT, Martinko JM, Dunlap PV and Clark DP. (2014). Brock Biology of Microorganisms. 14th edition. Pearson International Edition.

LAB COURSE- IV

Immunology and Medical Microbiology

1. Blood tests--- TC, DC, ESR
 2. Estimation of blood haemoglobin
 3. Determination of blood grouping and Rh type
 4. Antigen-Antibody reactions- Agglutination - Widal test
 - a. Flocculation - VDRL test
 - b. Precipitation - double diffusion test
 5. Isolation and identification of staphylococci.
 6. Isolation of bacterial flora of skin by swab method.
 7. Study of various stages of malaria parasite in RBC using permanent slides.
 8. Preparation of Bacterial smear and staining of Mycobacterium tuberculosis (Acid fast staining).
 9. Study of pathogen, symptoms of diseases with help of photographs.
 - A) Polio
 - B) Tuberculosis
 - c) Influenza
 - D) Rabies
 - E) Anthrax
 - f) AIDS
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S S B N DEGREE COLLEGE (AUTONOMOUS) :: ANANTAPUR

B. SC. MICROBIOLOGY SYLLABUS UNDER CBCS

[2021-2022 Batch onwards]

II Year B. Sc Microbiology : IV Semester

Course V- Food and Industrial Microbiology

Work load: 60 hrs per semester]

[4 hrs/week

UNIT-1: Dairy Microbiology

- Microorganisms in milk and milk products
- Biochemical activities of microorganisms in milk
- Microbiological examination of milk
- Fermented dairy products
 - ❖ fermented milks (yoghurt)
 - ❖ cheese
 - ❖ butter

UNIT-2: Food Microbiology

- Microorganisms in food products
- Microbial spoilage of food products (canned foods)
- Food poisoning (food intoxication & food born infection)
- Microorganisms as food (SCP)
- General account of food preservation

UNIT-3: Microbial Bio-Technology

- Nature and types of raw materials used in industrial productions.
- Microorganisms of industrial importance (yeast, moulds, bacteria & actinomycetes).
- Screening and isolation of industrially important microorganisms).
- Outlines of strain improvement.

UNIT-4:

- Types of fermentations
 - 1.batch fermentation
 - 2.continuous fermentation
 - 3.sub-merged fermentation
 - 4.solid state fermentation
 - 5.surface fermentation
- Design of a fermentor

UNIT-5: Industrial Production of

- Alcohols - Ethyl alcohol
- Enzymes - Amylase
- Antibiotics - Penicillin
- Amino acids - Glutamic acid
- Organic acids - Citric acid

Text Books:

- Crueger W and Crueger A. (2000). Biotechnology: A textbook of Industrial Microbiology.
- 2nd Edition. Panima Publishing Company, New Delhi.
- Patel AH. (1996). Industrial Microbiology .1st Edition. MacMillan India Limited Publishing
- Company Ltd. New Delhi, India.
- Tortora GJ, Funke BR, and Case CL. (2008). Microbiology: An introduction.9th Edition.
- Pearson Education.
- Willey JM, Sherwood LM AND Woolverton CJ (2013), Prescott, Harley and Klein's
- Microbiology.9th Edition. McGraw Hill Higher education.
- Casida LE. (1991). Industrial Microbiology. 1st edition. Wiley Eastern Limited.
- Stanbury PF, Whitaker A and Hall SJ. (2006). Principles of Fermentation Technology. 2nd edition, Elsevier Science Ltd.
- Adams MR and Moss MO. (1995). Food Microbiology. 4th edition, New Age International (P)
- Limited Publishers, New Delhi, India.
- Banwart JM. (1987). Basic Food Microbiology. 1st edition. CBS Publishers and Distributors,
- Delhi, India.
- Frazier WC and Westhoff DC. (1992). Food Microbiology. 3rd edition. Tata McGraw-Hill
- Publishing Company Ltd, New Delhi, India.
- Jay JM, Loessner MJ and Golden DA. (2005). Modern Food Microbiology. 7th edition, CBS
- Publishers and Distributors, Delhi, India.

LAB COURSE – V

Food and Industrial Microbiology

1. Isolation of bacteria from fermented foods
2. Determination of quality of milk samples by MBRT method
3. Fermentative production of wine from grape juice
4. Estimation of remaining amount of sugars from wine by Nelson & Somaji's method
5. Estimation of streptomycin in a given sample
6. Isolation and screening of organic acids producing microorganisms



S S B N DEGREE COLLEGE (AUTONOMOUS) :: ANANTAPUR

Skill Development Course (SDC)

OFFERED BY DEPARTMENT OF MICROBIOLOGY

[2020-2021 Batch onwards]

I Semester

Introduction to Microbial World

Work load: 30 hrs (02h/wk)]

[02 credits &Max. Marks: 50

Unit 1: Introductory Microbiology:

a. History of Microbiology:

- Definition of microbiology and microorganisms.
- Discovery of Microorganisms, Spontaneous generation (Abiogenesis), Biogenesis.
- Germ theory of fermentation, Germ theory of disease.
- Contributions of Antony von Leeuwenhoek, Edward Jenner, Louis Pasteur, Robert Koch, Alexander Fleming.

b. Place of microorganisms in the living world:

- Haeckel's three kingdom concept
- Whittaker's five kingdom concept
- Differences between prokaryotes and eukaryotes

Unit 2: Viruses and Prokaryotic Microorganisms:

- General characters and morphology of viruses
- General characters and morphology of prokaryotic microorganisms
 - Eubacteria
 - Archaeobacteria
 - Cyanobacteria.

Unit 3: Eukaryotic Microorganisms:

- General characters, morphology and economic importance of eukaryotic microorganisms
 - Algae
 - Yeast
 - Fungi
 - Protozoa.



S S B N DEGREE COLLEGE (AUTONOMOUS) :: ANANTAPUR

Skill Development Course (SDC)

OFFERED BY DEPARTMENT OF MICROBIOLOGY

[2020-2021 Batch onwards]

II Semester

Human Microbial Disease Management

Work load: 30 hrs (02h/wk)]

[02 credits &Max. Marks: 50

Unit 1: Introduction To Microbial Diseases:

- Pathogen, pathogenicity, toxin, toxicity, virulence, infection, incubation period, mortality rate.
- Disease (epidemic, endemic, pandemic, sporadic).
- Infectious and non- infectious diseases.
- Microbial and non-microbial diseases.
- Nosocomial infections.

Unit 2: Microorganisms – Human Disease:

- Food and water borne diseases: Typhoid and Amoebiasis.
- Air borne diseases: Influenza and Covid – 19.
- Insect borne diseases: Dengue and Malaria.
- Sexually Transmitted Disease: AIDS.
- Zoonotic Disease: Rabies.

Unit 3: TREATMENT AND PREVENTION OF MICROBIAL DISEASES:

a. Treatment by using antimicrobial drugs:

- Antibiotics – definition and types of antibiotics (natural, semi- synthetic and synthetic).
- Mode of action of anti-bacterial drugs: Pencillin, polymyxin, streptomycin, tetracyclin and sulphanamide.
- Mode of action of anti-viral drugs: Azidothymidine and Rifampicin.

b. Prevention of microbial diseases:

- Elimination- Importance of personal hygiene and environmental sanitization.
- Prevention – Methods to prevent the spread of infectious agents.
- Protection – Active and passive immunization.



S S B N DEGREE COLLEGE (AUTONOMOUS) :: ANANTAPUR

Skill Development Course (SDC)

OFFERED BY DEPARTMENT OF MICROBIOLOGY

[2021-2022 Batch onwards]

III Semester

Microbial Inoculants Technology

Work load: 30 hrs (02h/wk)]

[02 credits &Max. Marks: 50

UNIT- I

- General account on microbial inoculants.
- Symbiotic N₂ fixing microorganisms-
 - ❖ Bacteria (Rhizobium) - Isolation, mass production and field application.
 - ❖ Cyanobacteria (Azolla) - Isolation, mass production and field application.
 - ❖ Actinomycetes (Frankia) - Isolation, mass production and field application.

UNIT- II

- Associative N₂ fixing microorganism (Azospirillum) - Isolation, mass production and field application.
- Non - Symbiotic N₂ fixing microorganisms (Azotobacter) - Isolation, mass production and field application.

UNIT-III

- Phosphate solubilizing microbes – (Pseudomonas) Isolation, mass production and field application
- Mycorrhiza
 - ❖ Importance of mycorrhiza in agriculture
 - ❖ Classification of mycorrhiza – (Ectomycorrhiza, Endomycorrhiza, Ectendo mycorrhiza and VAM)
 - ❖ Isolation Mass production and field applications of mycorrhiza

Text Books:

1. Kannaiyan, S. (2003). Bioethnology of Biofertilizers, CHIPS, Texas.
2. Mahendra K. Rai (2005). Hand book of Microbial biofertilizers, The Haworth Press, Inc. New York.
3. Reddy, S.M. et. al. (2002). Bioinoculants for sustainable agriculture and forestry, Scientific Publishers.
4. Subba Rao N.S (1995) Soil microorganisms and plant growth Oxford and IBH publishing co. Pvt. Ltd. NewDelhi.
5. Subba Rao N.S. (1988) Biofertilizers in Agriculture and forestry Oxford and IBH Publishing Co., Ltd., New Delhi.



S S B N DEGREE COLLEGE (AUTONOMOUS) :: ANANTAPUR

Skill Development Course (SDC)

OFFERED BY DEPARTMENT OF MICROBIOLOGY

[2021-2022 Batch onwards]

III Semester

Microbial Fermentation Technology

Work load: 30 hrs (02h/wk)]

[02 credits &Max. Marks: 50

UNIT-I Introduction to fermentation technology:

- Definition and importance of fermentation,
- Types of fermentations (batch, continuous, surface and submerged fermentation).
- Construction and design of fermenters (anaerobic fermenter, stirred tank bioreactor and air lift fermenter).

UNIT-II Products of Fermentation technology:

- Organic acids (Citric acid)
- Enzymes (Amylases)
- Aminoacids (Glutamic acid)
- Antibiotics (penicillin)
- Alcohols (ethyl alcohol)

Unit – III Fermented food products

- Fermented dairy products – Fermented milks, cheese and butter.
- Fermented foods – sauerkraut and Dhokla.
- Fermented bakery products- Cake and cookies.

Text Books:

1. Dubey, S.C. (2007). Basic Baking 5th Ed. Chanakya Mudrak Pvt. Ltd.
2. Raina et.al. (2003). Basic food Preparation-A complete Manual. 3rd Ed. Orient Longman Pvt. Ltd.
3. Manay, S. & Shadaksharaswami, M. (2004). Foods: Facts and Principles, New Age Publishers.
4. Barndt R. L. (1993). Fat & Calorie – Modified Bakery Products, Springer US



Course Outcomes:

Aim and objectives of Microbiology:

The programme B.Sc Microbiology introduces students to the vast array of microbes VIZ bacteria, archaea, viruses, fungi and protozoa around us, their diversity and applications. The programme has a strong practical emphasis, providing students with the basic laboratory skills required for a career in either applied or research microbiology.

Course Specific outcomes:

- ❖ Microbiology students who graduate with a Bachelor of Science with Microbiology will
- ❖ Acquire knowledge on fundamentals of Microbiology
- ❖ Understand details of bacterial, fungal, algal and viral morphology and physiology.
- ❖ Competently be able to cultivate and characterize bacterial and fungal forms.
- ❖ Grasp the fundamental concepts of immunity and the contribution of organs and cells in the development of immune response.
- ❖ Gain insight into the various aspects of microbial genetics.
- ❖ Be proficient on cloning vectors and rDNA technology.
- ❖ Assimilate technical skills on microbial genetics and molecular biology.
- ❖ Realize the application-oriented aspects of Microbiology.
- ❖ Understand the concepts and development of microbial diseases in animals & plants.
- ❖ Realize the principles of prevention and treatment of microbial diseases.



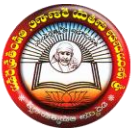
Beyond Syllabus

Measurable:

- Assignments on out of syllabus topics
- Student seminars (Individual presentation of papers) on topics relating to out of syllabus topics
- Quiz Programmes on out of syllabus topics
- Individual Field Studies/projects
- Group discussion on out of syllabus topics
- Group/Team Projects on out of syllabus topics
-

General:

- Collection of news reports and maintaining a record of paper-cuttings relating to topics covered in syllabus
- Watching TV discussions and preparing summary points recording personal observations etc., under guidance from the Lecturers
- Any similar activities with imaginative thinking.
- Organization of first-aid camp, swachh bharat, cleanliness week, Nutrition, personal hygiene and health awareness etc.
- Exposure to scientific instruments and hands- on experience
- Field visit/Industrial visit/Research Laboratory visit and submission of report



S S B N DEGREE COLLEGE (AUTONOMOUS) :: ANANTAPUR
Department Of Microbiology

Events:



AIDS AWARENESS PROGRAMME & RALLY ON WORLD AIDS DAY







**BLOOD GROUPING PROGRAMME BY MICROBIOLOGY STUDENTS
(RED RIBBON CLUB) AT P.KOTHAPALLI**



**CLEAN AND GREEN PROGRAMME BY MICROBIOLOGY STUDENTS
AT KOTHAPALLI**

