M. Sc Nanoscience and Technology

[VALUE ADDED COURSE (VAC)]

Regulations, Description and Syllabus

[For candidates admitted form the Academic year 2021 onwards]

DEPARTMENT OF NANOSCIENCE AND TECHNOLOGY

ALAGAPPA UNIVERSITY

(A State University Accredited with "A+" grade by NAAC (CGPA: 3.64) in the Third Cycle and Graded as Category-I University by MHRD-UGC)

KARAIKUDI-630003, TAMIL NADU, INDIA

DEPARTMENT: NANOSCIENCE AND TECHNOLOGY

ALAGAPPA UNIVERSITY

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(A State University Accredited with "A+" grade by NAAC (CGPA: 3.64) in the Third Cycle and Graded as Category-I University by MHRD-UGC)

M.Sc Nanoscience and Technology

(For those who join the Course in July 2021 onwards)

VALUE ADDED COURSE SYLLABUS

[For candidates admitted from the Academic year 2021 onwards]

Name of the Department	:	**Nanoscience and Technology**
Name of the Subject Discipline	:	**Nanoscience and Technology**
Program of Level	:	**M.Sc**
Course name	:	**Value Added Course**

Introduction: Value-added courses are part of the curriculum designed to impart the necessary skills to increase employability and equip students with the essential skills to succeed in life. The Department of Nanoscience and Technology offers a variety of value added courses which are conducted after class hours (5.30-6.30 pm). These courses are conducted by in- house staff and help students stand out from the rest in the job market by adding value to their resume. These value-added courses are often independent of each type of department.

General Objectives of the Program: The general objective of the M.Sc program in Nanoscience and Technology is to develop strong-minded graduates with high-quality skills in the field of Nanoscience and Technology with chemistry. The curriculum designed is to assist the students in understanding the vital concept of skill and industry orientated or need based course in the specific course on Awareness on Chemicals and Laboratory Utilization, Personality Development and Interview Skills, Good Workplace Practices for Handling of Nanomaterials, Nanotechnology for Smart Agriculture, Nanomaterials in Food Technology, Attitude of Employability Skill. At the end of the program, the student will gain in-depth knowledge in Bioinformatics and play an active role in biological research, government or non-government organization, and private sectors.

Courses: 'Course' is a component (Department paper) of a programme. Each course offered by the Department is identified by a unique course code. A course contains lectures to meet effectively the teaching and learning needs. The students have to undergo any one value added course in each semester offered by Department of Nanoscience and Technology and the exam should be announced before the end of university exam.

General Objectives of the Course:

- To improve employability skills of students.
- To provide an opportunity to students develop their inter-disciplinary skills.
- To bridge the skill gaps and make students industry ready.
- To provide the novel information about form the course to the students.

Guidelines for Conducting Value Added Courses

- Value Added Course is not mandatory to qualify for any program.
- It is a teacher assisted learning course open to all students without any additional fee.
- The value added courses may be also conducted class hours (evening 5.30-6.30 pm).
- A student will be permitted to register only one Value Added Course in each Semester.
- The students may be allowed to take value added courses offered by parent department offering the course.

Duration and Venue

The duration of value added course should not be less than 30 hours. Value added course shall be conducted in the respective faculty itself.**Attendance**

- Each faculty members shall be maintenance of for all courses Attendance and Assessment Record for candidates who have registered for the course.
- The record shall contain details of the students' attendance and marks obtained in the Internal Assessment Tests.
- The record shall be submitted to the Head of the Department once a month for monitoring the attendance and syllabus coverage.
- At the end of the semester, the record shall be duly signed by the Course Instructor and the Head of the Department and placed in safe custody for any future verification.
- Each student shall have a minimum of 75% attendance in all the courses of the particular semester failing which he or she will not be permitted to write the End-Semester Examination.

Medium of Instruction

The medium of instruction is English only.

Passing Requirement and Grading

- The passing requirement for value added courses shall be 40% of the marks prescribed for the course.
- A candidate who has not secured a minimum of 40% of marks in a course (internal and end-term) shall reappear for the course in the next semester/year.
- The grades obtained in course will not be included for calculating the CGPA.

Course Completion

- Learners will get a certificate after they have registration and followed by write the exam and passed.

The students who have successfully completed the Value Added Course shall beissued with a Certificate duly signed by the Authorized signatories.

List of Course Details offer by Department of Nanoscience & Technology

Course Offer to M.Sc Nanoscience and Technology & M.Sc Chemistry (Specialization in Nanoscience and Technology)					
S.No	**Paper Code**	**Title of the Paper**	**Th/Pr**	**Hrs**	**Marks**
1	VAC-NST-001	Awareness on Chemicals and Laboratory Utilization	Th/Pr	6	50
2	VAC-NST-002	Personality Development and Interview Skills	Th/Pr	6	50
3	VAC-NST-003	Good Workplace Practices for Handling of Nanomaterials	Th/Pr	6	50
4	VAC-NST-004	Nanotechnology for Smart Agriculture	Th/Pr	6	50
5	VAC-NST-005	Nanomaterials in Food Technology	Th/Pr	6	50
6	VAC-NST-006	Attitude of Employability Skill	Th/Pr	6	50

Th-Theory, Pr-Practical

AWARENESS ON CHEMICALS AND LABORATORY UTILIZATION

Coordinator Name**: Prof. P. Sakkthivel** **Course Timeline: 30 Hrs**

Duration: **July & August -2023 (01-07-2023 & 11-08-2023**)

Course Code	**VAC-NST-001**	**Awareness on Chemicals and Laboratory Utilization**	**L**	**T**	**P**	**C**
Core/Elective/Supportive		**Value Added Course**				

Course Objectives:

1. To get knowledge about toxicity of chemicals and rules of safety.
2. To increase interest and motivation through laboratory which will lead to development of positive attitude
3. To develop mental and motor abilities by handling chemicals and instruments.
4. To apply skills and knowledge in real situations.
5. To understand the importance of skills to be used for environmental cleanliness and protection.

Expected Course Outcomes:

1.	Will be able to organize chemical laboratory and manage with perfect records.
2.	Will be able to understand about standard precautions include hand washing, usage of gloves, masks, caps, gown, and aprons and rules of safety.
3.	Will be able to understand about organic and inorganic chemicals and toxicity of inorganic, organic and nanomaterials.
4.	Will be able to understand about purification and separation techniques.
5.	Will be able to use computer for chemical analysis and application
6.	Will be able to determine the removal of chemical waste and recycling process

UNIT-I	Introduction of Chemistry lab	6 hours
General introduction of chemistry laboratory, lab design, storage, ventilation, lighting, fume, arrangement of store, maintenance of laboratory, equipment/apparatus cleaning of laboratories, Glass apparatus, volumetric apparatus, miscellaneous apparatus, apparatus for heating, handling and storage of glass apparatus.		
UNIT-II	**Laboratory Utilization and Rules of Safety**	**6 hours**
Protection in laboratories and rules of safety: -Personal protection, protection against chemicals, precautions while using lab ware's and instruments, symbols to be identified by all laboratory technicians, fire safety, steps to be followed at emergency. **Hazards:** Fire hazards, chemical hazards, gas hazards **Files:** Classification of files, filling methods, filling system for equipments and chemicals, preparation of lab manuals. **Records:** Stock records, recording stock, record of breakage, information about equipment serial numbers, record maintenance, and miscellaneous records.		
UNIT-III	**Chemicals**	**6 hours**
Solution Preparation: Water as a solvent, types of water, solutions, components of a solution, types of solution, solubility, concentration of solutions: percentage, molarity, normality, molality (in ppm) calculation of masses and volumes for preparation of solutions solids, liquids. **Organic chemicals:** Measurement, Handling, Weighing, Transfer, Preparation of solution and storage. **Inorganic chemicals:** Measurement, Handling, Weighing, Transfer, Preparation of solution and storage		
Unit-IV	**Toxicity of chemicals**	**6 hours**
Toxicity of chemicals and nanomaterials: Strong acids, heavy metals, radioactive species, carcinogens, teratogens, allergens.		
Handling of chemicals and nanomaterials: Liquid handling-handling of gases-handling of radioactive materials.		
Unit-V	**Removal of chemical waste**	**6 hours**
Use of computer in laboratory: Hardware in computer, CPU, data input, data processing, data output, application of MS office software and Internet. **Removal of chemical waste and recycling process:** Classification of chemical wastes - Importance of reducing, reusing and recycling process - Reducing methods of chemicals usage- Reusing methods of chemicals - Recycling process of chemical wastes-Disposal of chemical waste - Pollution prevention and waste minimization.		
Total Lecture		**30 hours**
References		

1. Candis A. Kinkus, "Laboratory Management", Published by Demos Medical
2. Donna Losen, “Clinical Chemistry: Fundamentals and Laboratory Techniques”, published by W B Saunders Co Ltd
3. Vogels Qualitative Inorganic Analysis, A. I. Vogel, *Prentice Hall,*.
4. Vogels textbook of chemical quantitative analysis**,** *Longman Scientific* ***3.*** The golden book of chemistry experiments, R. Brent, *Golden press, NY* ***4.*** Comprehensive Practical Organic Chemistry, V. K. Ahluwalia, & R. Aggarwal, *Universities Press.*
5. Lab Manual of Organic Chemistry, R. K. Bansal, *New Age Pub*.
6. Senior Practical Physical Chemistry, B. D. Khosla, R. *Chand & Co*
7. Chemistry Practical, O. P. Pandey, D.N. Bajpai, S. Giri, *S. Chand*
8. Advanced practical chemistry, J . Singh etal. *Pragati Prakashan*
9. Computer fundamental *,* B Ram*, New Age Pub.*
10. Laboratory Waste Management: A Guidebook by ACS Task Force on Laboratory and Chemical Waste Management published by OUP USA

PERSONALITY DEVELOPMENT AND INTERVIEW SKILLS

Coordinator Name: **Prof. P. Sakkthivel** **Course Timeline: 30 Hrs**

Duration: **September & October - 2023 (01-09-2023 to 12-10-2023)**

Course Code	**VAC-NST-002**	**Personality Development and Interview Skills**	**L**	**T**	**P**	**C**
Core/Elective/Supportive		**Value-Added Course**		**-**		

Course Objectives:

1 . Aims to gain self-competency and confidence. Aims for high sense of social competency.
2. Aims to give an insight into creativity and innovation.
3. Aims at developing competences in areas like knowledge and critical thinking skills (learning to know), practical skills (learning to do), personal skills (learning to be) and social skills (learning to live together).
4. Aims to give a good balance of physical, social, personal, emotional and cognitive development.
5. Aims to guide by suitability for the jobs in terms of their personality and attitude.
6. Aims to give a glimpse of Entrepreneurship.

Expected Course Outcomes:

On the successful completion of the course, student will be able to:

1.	Understand conception of soft skills.
2.	Be able to set goals and manage own professional and personal development.
3.	Developing skills in planning and managing to work in a team.
4.	Identified the cost and benefits of dealing with stress.
5.	Be able to enhance sensitivity to creativity and innovation.
6.	Be aware of the processes involved in different types of interviews & can successfully participate in an interview.
7.	Clear choice of profession and career possibilities can be identified
8.	Be able to polish and incubate the inhibited entrepreneurial abilities.

Unit-I	**LEARNING TO KNOW**	**6hours**

Problem Solving Skills- Causes and consequences, Steps in solving, Five W's and one H framework, Critical thinking skills- Characteristics & Steps involved, Strategies required and models of creative skills, Creative thinking- Difference with innovation, Steps to stimulate creativity, understanding and importance of human values, becoming a role model.

Unit-II	**LEARNING TO BE**	**6 hours**

Goal setting- short, medium and long-term goals, Importance & steps, Choices and selection of setting goals & SMART goals, Interpersonal skills- Components, techniques, development & benefits of effective interpersonal skills, Stress Management- Factors causing stress, positive and negative types, effects on body & Mind- stress removal techniques.		
Unit-III	**LEARNING TO LIVE TOGETHER**	**6 hours**
Assertive communication- Different communication styles, strategies & techniques of assertive communication, Team Building - Difference with group, qualities of a team, Stages of team development and Effective team building, Leadership development- Importance and types of leadership styles.		
Unit-IV	**INTERVIEW SKILLS**	**6 hours**
Before you get: -Prepare resume, references - Types of interviews, Time management- Necessity and benefits, **Once scheduled: -**Research about company, practice, prepare, health tips and grooming for success, **During the interview: -**First impression, General strategies for answering questions, Mirroring, Representation, Body language Do's and Don'ts, Tips and Tricks. **Practice questions: -** Common questions, how to handle illegal questions &conclusion.		
Unit-V	**ENTREPRENEURSHIP**	**6 hours**
Concept and importance, Benefits and potential risks – Traits, qualities and competencies of an entrepreneur, role of technology in contemporary business environment- Ethics and Entrepreneurship.		
Total Lecture		**30 hours**

References

1. ManikaGhosh, "positivity - A way of Life", published by Orient Blackswan Pvt Ltd.
2. Swami Vivekananda, "Personality Development", published by Ramakrishna mission.
3. Adair J, " Effective leadership", Aldershot, Gower.
4. Raymond L.Gorden, "Basic interviewing skills", published by waveland pr Inc.
5. Vinnie Jauhari & Sudhanshu Bhushan, "Innovation Management", Oxford University press.
6. Martin Perlich, "The art of the interview", published by Silman-James press.
7. Dr.S.S.Khanka, "Entrepreneurial Development", S.Chand publications.
8. Dr.C.B.Gupta and Dr.N.P.Srinivasan, "Entrepreneurship Development in India", S.Chand Publications.
9. startupindia.gov.in

GOOD WORKPLACE PRACTICES FOR HANDLING OF NANOMATERIALS

Coordinator Name: **Dr. G. Ramalingam** **Course Timeline: 30 Hrs**

Duration: **Feb & March - 2024 (01-02-2024 to 14-03-2024)**

Course Code	**VAC-NST-003**	**Good Workplace Practices for Handling of Nanomaterials**	**L**	**T**	**P**	**C**
Core/Elective/Supportive		Value-Added Course		-	-	

Course Objectives:

The main objectives of this course to:

1 .To aware hazards materials

2 .To understand exposure control strategies

3. To follow best practices of handling nanomaterials

4. To care about food and healthcare

5. To adhere safety measure in R&D and industry.

Expected Course Outcomes:

On the successful completion of the course, students will be able to:

1.	To gain knowledge hazarders and toxic chemicals
2.	To familiarizing nano hazarders materials
3.	To do best practice and follow the safety rules
4.	To learnt about work place exposure to nanoparticle
5.	To understand safety of manufactured nanomaterials in R&D and industry

Unit-I	**Introduction to hazards materials**	**6 hours**

Introduction, identifying hazards nanomaterials, Pathways and common tasks that could result in exposure.

Unit-II	**Exposure control strategies**	**6 hours**

Engineering controls, Administrative (procedural) controls, Personal protective equipment (PPE) and Waste disposal

Unit-III	**Best practices to be followed while handling nanoparticles**	**6 hours**

Locating emergency equipment, Hygiene, Labeling and signage, cleaning procedures and spill

Unit-IV	**Food and healthcare**	**6 hours**

Best practices and adequate approaches regarding making and handling of nanopowders and use of products relating to food and healthcare

Unit-V	**Safety practices**	**6 hours**

Transporting, Buddy system, Explosion safety, Access control, Dry materials

Total Lecture & Practical hours	**30 hours**

References

1. ISO/TR 12885:2008(E).*Nanotechnologies — Health and safety practices in occupational settings relevant to nanotechnologies*, First edition, Pearson Education India publisher.
2. Angeles Villanueva et al (2009), *The influence of surface functionalization on the*

enhanced internalization of magnetic nanoparticles in cancer cells, Nanotechnology 20 (2009) 115103.
3. Alok Dhawan, Rishi Shanker,Mukal Das, C. Kailash Gupta (2011), *Guidance for safe handling ofnanomaterials*, J. Biomed. Nanotechnol, 7 (2011), 218-224.
4. Robert A Yokel, Robert Macphai(2011), *Engineered nanomaterials: exposures, hazards and risk prevention*, J. Occupational Medicine and Toxicology, 6(7) (2011)
5. Marilyn F.Hallock, PamGreenley, Lou DiBerardinis, Dan Kallin, (2009) *Potential risks of nanomaterials and how to safely handle material of uncertain toxicity* J. Chemical Healthand Safety, 16 (2009), 16-23.

Web references

1. Safety of manufactured nanomaterials, www.oecd.org/env/nanosafety
2. NIOSH workplace safety & health topics, www.cdc.gov/niosh/topics/nanotech
3. Approaches to safe nanotechnology- Managing the health and safety concerns associated with engineered nanomaterialshttp://www.cdc.gov/niosh/docs/2009-125/
4. Explosion hazards associated with nanopowders-A literature review, health and safety laboratory, HSL/2004/12.http://www.hse.gov.uk/research/hsl_pdf/2004/hsl04-12.pdf
5. Fire and explosion properties of nanopowders: A research report-prepared by the health and safety laboratory for the health and safety executive http://www.hse.gov.uk/research/rrpdf/rr782.pdf
6. Work place exposure to nanoparticle-A report on European risk observatory, European agency or safety and health at work 2009).http://osha.europa.eu/en/publications/literature_reviews/workplace_exposure_to_nanoparticle

NANOTECHNOLOGY FOR SMART AGRICULTURE

Coordinator Name: **Dr. N. Suganthy** **Course Timeline: 30 Hrs**

Duration: **July & August- 2024 (01-07-2024 to 13-08-2024)**

Course Code	**VAC-NST-004**	**Nanotechnology for Smart Agriculture**	**L**	**T**	**P**	**C**
Core/Elective/Supportive		**Value-Added Course**		**-**	**-**	

Course Objectives:

The main objectives of this course are to:

1.To understand the properties of different kind of metal, metal oxide, polymer and ceramic nanoparticles used in agricultural field

2. To gain knowledge on fabrication of nanofertilizers.

3.To study the various nanocarrier system for the encapsulation of plant fertilizer compounds

4. To determine and treat the plant disease causing plant pathogens.

5.To understand the work function of the nanosensors in plant pathogens, stress factor and soil contaminant detection

Expected Course Outcomes

On the successful completion of the course, student will be able to:

1	To acquaint participants with the recent advances in nanotechnology.
2	Pursue a career as a researcher in agricultural and plant science research laboratories
3	Extended knowledge obtained through this course will be useful to become an entrepreneur in production and commercialization of nanofertilizers,
4	Experience on nanosensors for the plant production and monitoring will be helpful for the invention of plant safety devices
5	Development of nanofertilizers for the production from pest, microbes and nutritional deficiency factors enhances the probability enhanced growth and yield

Unit-I	**Nanomaterials in agriculture**	**6 hours**

Types of nanomaterials used in agricultural production and antimicrobial effect against plant pathogens. Preparation of ZnO, MgO and Fe_3O_4 nanoparticles for the agricultural application. Superior properties and features of the nanostructures in plant tissue culture.

Unit:II	**Fabrication of nanofertilizers**	**6 hours**

Preparation of nanofertilizers as a solution for plant nutrition deficiency. Nano encapsulation of growth regulators, amino acids, calcium derivatives, preliminary plant nutrients and organic compounds for the enhanced plant growth.

Unit:III	**Plant treatment with nanofertilizers**	**6 hours**

Mechanism of action of nanostructures on plant growth and yield. Permeability and absorption of nanoparticles towards the leaf and root. Apoplast and symplast pathways for the interaction of nanoparticles with plant cells.).		
Unit:IV	**Interaction of nanomaterials with plants**	**6 hours**
Application of nanofertilizers to the plant and soil environment- Foliar and irrigation approaches. Loading and controlled release of the agro-nutrients and fertilizer compounds using nanocarrier system. Effect of nanofertilizers on the growth, yield, biomass and phytocompounds of the crops.		
Unit:V	**Nanosensors**	**6 hours**
Nanomaterials based sensors for the detection of plant pathogens and toxic contaminants along with plant physiochemical parameters. Nano assembled immunosensors for the detection of plant pathogens. Nano sensors for the detection of pesticide, fungicide and the metallic elements including Ti, Pb, Cu, As and Hg in the soil environment.		
Total Lecture hours		**30 hours**

References

1. Bosoon Park, Michael Appell, (2014). *Advances in Applied Nanotechnology for Agriculture*. ACS Symposium Series 1143, American Chemical Society
2. Parul Chaudhary, Anuj Chaudhary, Ashok Kumar Nadda, Priyanka Khati, (2023). *Advances in Nanotechnology for Smart Agriculture*, CRC Press
3. Kamel A. Abd-Elsalam, Ram Prasad, (2018). Nanobiotechnology Applications in Plant Protection; In Nanotechnology in the Life Sciences. Springer International Publishing.
4. Avinash P. Ingle, (2021). Nanotechnology in Plant Growth Promotion and Protection: Recent Advances and Impacts. Wiley
5. Grumezescu, Alexandru Mihai, (2016). Novel Approaches of Nanotechnology in Food, In Nanotechnology in the agri-food in
6. Shivendu Ranjan, Nandita Dasgupta, Eric Lichtfdustry, volume 1, Academic Pressouse, (2017). Nanoscience in Food and Agriculture 5; In Sustainable Agriculture Reviews 26. Springer International Publishing

NANOMATERIALS IN FOOD TECHNOLOGY

Coordinator Name: **Dr. N. Suganthy** **Course Timeline: 30 Hrs**

Duration: **September & October - 2024 (01-09-2024 to 14-10-2024)**

Course Code	**VAC-NST-005**	**Nanomaterials in Food Technology**	**L**	**T**	**P**	**C**
Core/Elective/Supportive		**Value-Added Course**		**-**	**-**	

Course Objectives:

The main objectives of this course are to:

1.To understand the properties of different kind of metal, metal oxide, polymer and ceramic nanoparticles used in food industries

2.To understand the work function of the nanobiosensors in food contaminant detection compounds to predict its biological activity

3.To recognize the principles of antimicrobial evaluation and potential of nanomaterials against food pathogens

4.To study the various nanoencapsulation techniques for the food and nutritional products

Expected Course Outcomes:

On the successful completion of the course, student will be able to:

1. Pursue a career as a researcher in food and medical research laboratories

2. Prior knowledge obtained through this Programme to be helpful to get a job under quality control divisions in food industries

3. Learn to develop the advanced food packaging system using nanotechnology to increase the shelf life of the food products

4. Develop the sensors for evaluating food quality and safety

Unit-I	**Introduction to nanotechnology in food sector**	**6 hours**

Categories of nanomaterials used in food industry, Metal, metal oxide and polymeric nanoparticles in food industry. Standard regulations of nanoparticles in food and medicinal industries

Unit-II	**Nano remediation on food contaminant**	**6 hours**

Antimicrobial effect of nanomaterials against food pathogens such bacterial, fungal and yeast contaminations, ecofriendly edible nanomaterials for the alternative to the pesticides, fungicides and chemical preservatives in consumer food products

Unit-III	**Nanotechnology in food processing**	**6 hours**

Nanoadditives & nutraceuticals to improve food quality; Nanoencapsulation to improve the flavor, odor and texture. Techniques involved in nanoformulations: encapsulation, cross linking, cross linking, entrapment and adsorption

Unit-IV	**Nanomaterials in food packaging**	**6 hours**

Physical Properties of Packaging Materials - Strength - Barrier Properties, Light Absorption – Structuring of Interior Surfaces - Antimicrobial Functionality - Visual Indicators – Quality Assessment - Food Safety Indication - Product Properties. Nanopolymers, Nanocomposites, Nanostructured coatings, Bionanocomposites, Polyhydroxyalkonates for food packaging. Intelligent system in food packaging- contaminant sensor, security/Anticounterfeiting devices

Unit-V	**Nanosensors**	**6 hours**

Sensors to detect safety and quality of food- Detection of food borne pathogens. Types-Enzyme Biosensors and Diagnostics, DNA-Based Biosensors and Diagnostics, Radiofrequency Identification-Integrated Nanosensor Networks, Detection and Response- Lateral Flow (Immuno)assay, – Nucleic Acid Lateral Flow (Immuno)assay – Flow-Through (Immuno)assays – Antibody Microarrays – Surface Plasmon Resonance Spectroscopy

Total Lecture & Practical Hours	**30 hours**

References

1. Qingrong Huang, (2012). *Nanotechnology in the Food, Beverage and Nutraceutical Industries*.Woodhead Publishing Series in Food Science, Technology and Nutrition, Woodhead Publishing.
2. Fereidoon Shahidi(eds.), (2013). *Bio-Nanotechnology: A Revolution in Food, Biomedical and Health Sciences*. Wiley-Blackwell.
3. Grumezescu, Alexandru Mihai, (2016). *Novel Approaches of Nanotechnology in Food*, In Nanotechnology in the agri-food industry, volume 1, Academic Press
4. AlexandruGrumezescu, (2016). *Encapsulations. Nanotechnology in the Agri-Food Industry Volume 2*, In Nanotechnology in the agri-food industry volume 2, Academic Press.
5. Vineet Kumar, Praveen Guleria,Shivendu Ranjan, Nandita Dasgupta and Eric Lichtfouse, (2021). *Nanosensors for Environment, Food and Agriculture Vol. 1*.Springer International Publishing.

ATTITUDE OF EMPLOYABILITY SKILL

Coordinator Name: **Dr. G. Ramalingam** **Course Timeline: 30 Hrs**

Duration: **Feb & March - 2025 (01-02-2025 to 14-03-2025)**

Course Code	**VAC-NST-006**	**ATTITUDE OF EMPLOYABILITY SKILL**	**L**	**T**	**P**	**C**
Core/Elective/Supportive		**Value-Added Course**		**-**	**-**	

Course Objectives:

1.To understand the behaviours attitude of employment in office
2.To learn quality and quantity enhancement
3.To inculcate knowledge about the factors that influence the process of office
4. A basic coverage of the important topics under 'Expressivity, Employability, Employment'
5.To guide them in understanding the various technical skill

Expected Course Outcomes:

1	Capable in working of team spirit
2	Getting real time experience of employment
3	Gained knowledge behavioral attitude of colleagues
4	Understand the factors controlling emotional intelligent
5	Learning culture clam practice of employment

Unit-I	**Education-Employability-Employment**	**6 hours**

Conceptual Understanding- Education- Manifest: Enabling Cumulative Fund of Curriculum and Common Parlance Knowledge and Skill- Numeric Sense and Quickness- Attitude towards and Aptitude for enhanced Ingenuity- Employability: Kinetic Use of Knowledge

Unit-II	**Literary Skills-Employability-Employment**	**6 hours**

Literary Reflections from School Days inspired by Great Authors, Great Works, Quotable Quotes, Important Verses and Even Nursery Rhymes- Let your Ears Hear Sounds, Screeches, Sentences, Speeches and Songs -Let the substances be Learnt- Vocabulary Variety, Velocity, Vistas and Vanity- Be Fluent, Fresh, Flash and Fanfare- Tense Sense and Sense in Sentences- Reading Passages from Dailies and Literary Pieces- Expansion and Contraction of Passages- Preparing for Presentations Long and Short- Write PQRS: Poem-Quote-Story-Report.

Unit-III	**Quantitative Skills-Employability-Employment**	**6 hours**

Love, Learn and Leverage Numbers, Dimensions, Proportions, Equations and Derivations- Measurement Matters in Many Ways in Life- Understanding the Metrics and Non-metrics- Transcending the Mental Mathematics- 'Quest Quizy Quantics'- Lit you with the Light of Algebra, Geometry, Calculus and 'Big Data'- Be a Statistician: Descriptive and Inferential Statistics

Unit-IV	**Expressivity-Employability-Employment**	**6 hours**

Inward-Outward Personality Expressiveness- Inner-side of Expressiveness in Thought, Word and Action- Communicate Your Emotions-Fantasy-Glam-Hits- Imagination- Contours of

Communication-‘7Cs': Content-Context-Clarity-Completeness-Construct- Consonance-Confidence-Watch and Notch Your Grammar- Your Honour- Your Illuminator- Your Job-guarantor- Outer-Personality Expressiveness: Groomed Ladies and Gentlemen: Your Physics and Chemistry Accessories from Top-Tip-Toe- Write Your Resume expressing your credentials		
Unit-V	**Exposure-Employability-Employment**	**6 hours**
Expose to Novelties-Nature-Niches- Nuances-Niceties – Get you exposed substantially and superbly in Local-National-Global Political, Economic, Social, Technological, Legal and Environmental (PESTLE) issues and also in Info-tech, Familial, Financial, Commercial and Cultural, (IFFCC)- Face Your Interview: Prepare Well- Mock-interviews - You tube Yourself- Attire for Context Convenience- Listen to Instructions and Settings -Answer/Converse to the Point - Interview etiquette-Group Discussion: Listening- Ice breaking-Participation-Norming-Forming- Performing-Storming-Reforming-Conforming.		
Total Lecture		**30 hours**

References

1. Trishna’s, Quantitative Aptitude for Competitive Examinations, Pearson.
2. Narendra Sharma, Mathematics Basic Maker: For Competitive Exams, SSC, All Entrance Exams, Railway Exams, Bank Exams, NTSE Exams, Olympiads & Grade VI to XII Students (volume-1) Paperback – 2016
3. David Hind and Stuart Moss, Employability Skills Paperback – Import, 30 Oct 2005
4. Ms Frances Trought, Brilliant Employability Skills: How to stand out from the crowd in the graduate job market, Pearson, 2011.
5. Rajesh Kumar, English Language Communication Skills (With CD) : Lab Manual cum Workbook (English) 1st Edition, Cengage Learning.
6. Scot Ober, Contemporary Business Communication Seventh Edition, Houghton Mifflin, 2007.
7. Xavier Alphones S.J “We Shall Overcome” A Textbook on Life Coping Skills, ICRDCE Publication, Chennai, March 2004.
8. Sarvesh Gulati “Corporate Grooming and Etiquette”, Rupa Publications India Pvt. Ltd., New Delhi, 2010
9. Sasikumar V., Kiranmai Dutt P and Geetha Rajeevan, “Communication Skills in English”, Cambridge University Press and Mahatma Gandhi University
10. Marilyn Anderson, Pramod K Nayar and Madhucchandra Sen. “Critical Thinking, Academic Writing and Presentation Skills”, Pearson Education and Mahatma Gandhi University.
11. Ajay Rai, “Intelligence Tests”, Sterling Paperbacks, Published by Sterling Publishers Pvt. Ltd., L-10, Green Park Extension, New Delhi, 2001