VANITA VISHRAM WOMEN'S UNIVERSITY

PG PROGRAMME

GENERAL ELECTIVE COURSE
SEMESTERS II

w.e.f. the Academic Year 2022-2023

DEPARTMENT OF FOOD AND NUTRITION
SEMESTER II
GENERIC ELECTIVE

FN32010- NUTRITIONAL SUPPLEMENTS	
Course Objectives The course will enable the students to 1. Understand the need of supplements by different groups of people to maintain a healthy life. 2. Understand the outcome of deficiencies in dietary supplements. 3. Appreciate the components in dietary supplements and the application. 4. Appreciate the regulatory and commercial aspects of dietary supplements including health claims.	
Course Outcomes: This subject covers foundational topics that are important for understanding the need and requirements of dietary supplements among different groups in the population.	
- THEORY COURSE CONTENT **(6 CREDIT)**	
S.No.	**STRUCTURE**
Unit 1	Definitions of Functional foods, Nutraceuticals and Dietary supplements Classification of Nutraceuticals, Health problems and diseases that can be prevented or cured by Nutraceuticals i.e. weight control, diabetes, cancer, heart disease, stress, osteoarthritis, hypertension etc. Nutraceuticals/functional foods: Spirulina, Soyabean, Ginseng, Garlic, Broccoli, Gingko, Flaxseeds and their chemical nature, Medicinal uses and health benefits
Unit 2	**Phytochemicals as nutraceuticals:** Occurrence and characteristic features (chemical nature medicinal benefits) of following: • Carotenoids- α and β-Carotene, Lycopene, Xanthophylls, leutin • Sulfides: Diallyl sulfides, Allyl trisulfide. • Polyphenolics: Resveratrol • Flavonoids- Rutin , Naringin, Quercetin, Anthocyanidins, catechins, Flavones • Prebiotics / Probiotics.: Fructo oligosaccharides, Lactobacillus • Phyto estrogens : Isoflavones, daidzein, Geebustin, lignans • Tocopherols • Proteins, vitamins, minerals, cereal, vegetables and beverages as functional foods: oats, wheat bran, rice bran, sea foods, coffee, tea and the like.
Unit 3	**Introduction to free radicals:**

	Free radicals, reactive oxygen species, production of free radicals in cells, damaging reactions of free radicals on lipids, proteins, Carbohydrates, nucleic acids. Dietary fibers and complex carbohydrates as functional food ingredients.
Unit 4	**Antioxidants:** Endogenous antioxidants – enzymatic and nonenzymatic antioxidant defense, Superoxide dismutase, catalase, Glutathione peroxidase, Glutathione Vitamin C, Vitamin E, α- Lipoic acid, melatonin Synthetic antioxidants: Butylated hydroxyToluene, Butylated hydroxy Anisole. Functional foods for chronic disease prevention
Unit 5	Introduction of Enteral and Parenteral Feeding, Enteral Feeding: Equipment and Formulas, Advantages and disadvantages Types of feeds available in the market
Unit 6	Effect of processing, storage and interactions of various environmental factors on the potential of nutraceuticals. **Regulatory Aspects:** FSSAI, FDA, FPO, MPO, AGMARK. HACCP and GMPs on Food Safety. Adulteration of foods. Pharmacopoeial Specifications for dietary supplements and nutraceuticals.

References:

- Dietetics by Sri Lakshmi
- Role of dietary fibers and nutraceuticals in preventing diseases by K.T Agusti and P.Faizal: BSC Publication.
- Advanced Nutritional Therapies by Cooper. K.A., (1996).
- The Food Pharmacy by Jean Carper, Simon & Schuster, UK Ltd., (1988).
- Prescription for Nutritional Healing by James F.Balch and Phyllis A.Balch 2nd Edn., Avery Pub- lishing Group, NY (1997).
- G. Gibson and C.williams Editors 2000 Functional foods Woodhead Publ.Co.London.
- Goldberg, I. Functional Foods. 1994. Chapman and Hall, New York.
- Labuza, T.P. 2000 Functional Foods and Dietary Supplements: Safety, Good Manufacturing Practice (GMPs) and Shelf Life Testing in Essentials of Functional Foods M.K. Sachmidl and T.P. Labuza eds. Aspen Press.
- Handbook of Nutraceuticals and Functional Foods, Third Edition (Modern Nutrition)
- Shils, ME, Olson, JA, Shike, M. 1994 Modern Nutrition in Health and Disease. Eighth edition. Lea and Febig**er.**
- L.Kathleen Mahan,Sylvia Escott-Stump,(2008) Krause's Food & Nutrition Therapy, 12 edition.
- Merritt, Russell, (2005) the A.S.P.E.N. Nutrition Support Practice Manual 2nd Edition. American Society for Parenteral and Enteral Nutrition.

TEACHING METHODOLOGY

- PowerPoint presentations
- Videos
- Chalk and talk method
- Guest Lectures
- Group discussions
- Quiz and Debate

SEMESTER-2

INTRODUCTION TO NANOSCIENCE AND NANOTECHNOLOGY
(PH32050)

Credits: 3 (Theory) + 1 (Outside the classroom)
Contact hours per week: 3

Course Objectives:

- ☞ The aim of this course is to introduce an emerging area of science which involves the study of materials on an ultra-small scale and the novel properties that these materials possess.

Outline of the Course:

No.	Unit	Minimum No. of Contact Hours	Weightage in %
1.	**Background of Nanoscience & Nanotechnology, Quantum Mechanics of Low Dimensional Systems and its Application to Nanoscience**	15	33.33
2.	**Synthesis Techniques of Nanomaterials (Physical Methods and Chemical methods)**	15	33.33
3.	**Properties of Nanomaterials, Recent Advances in Nanotechnology and Applications of Nanotechnology in Various Fields**	15	33.33
	Total	**45**	**100**

Course Outcome:

At the end of this course, students will be able to

CO-1. Know the history and necessity of the field of nanoscience and nanotechnology.
CO-2. Understand the role of quantum mechanics in nanoscience and nanotechnology.
CO-3. Develop the skill of various synthesis methods of nanomaterials.
CO-4. Gain the knowledge about the properties of nanomaterials, advanced in nanotechnology.
CO-5. Understand the applications of nanomaterial**.**

General Elective Physics Semester-2	
Subject	**Hours**
INTRODUCTION TO NANO SCIENCE AND NANOTECHNOLOGY	**3 Hours /week**
Topic	
Unit – I	
Background of Nanoscience & Nanotechnology: History of Nanoscience, Definition of Nanometer, Nanomaterial, and Nanotechnology, Ancient Nanotechnology, Early Nanotechnologists. **Quantum Mechanics of Low Dimensional Systems and its Application to Nanoscience:** Introduction Energy Considerations: Bound States and Density of States, Quantum Confinement, Superlattices, Band Offsets, Quantum Transport in Nano clusters /Quantum Dots	**15**
Unit – II	
Synthesis Techniques for Nanomaterials: **Physical Methods:** Ball Milling, Thermal and Electron beam evaporation, DC Sputtering, Chemical Vapour Deposition (CVD), Molecular Beam Epitaxy **Chemical Methods:** Nucleation and Growth of Nanoparticles, Synthesis of Metal Nanoparticles by Colloidal Route, Sol-Gel Method, Chemical bath Deposition, Hydrothermal Synthesis	**15**
Unit – III	
Properties of Nanomaterials: Mechanical properties, structural properties, Electrical properties, optical properties, magnetic properties. **Recent Advances in Nanotechnology:** Introduction, Designing Molecules for Nano-electronics, Advances of Nanotechnology in Materials Science **Applications of Nanotechnology in Various Fields:** Applications in Material Science, Applications in Biology and Medicine, Applications in Surface Science, Applications of Quantum Dots, Applications of Magnetic Nanoparticles	**15**

Textbooks:

1. Nanotechnology: Principles and Practices, Sulabha K. Kulkarni, 3rd Edition, 2014 (Springer Nature**)**
2. Nanoscience and Nanotechnology: Fundamentals of Frontiers, Shubra Singh M.S. Ramachandra Rao,1st Edition, 2013 (Wiley).
3. Basics Principles of Nanotechnology by Wesley C. Sander
4. C.P. Poole, Jr. Frank J. Owens, Introduction to Nanotechnology (Wiley India Pvt. Ltd.).
5. K.K. Chattopadhyay and A. N. Banerjee, Introduction to Nanoscience and Technology (PHI Learning Private Limited)

MASTER OF SCIENCE MICROBIOLOGY

SEMESTER 2
GENERAL ELECTIVE COURSE PAPER 1
MB33050 MICROBIAL BIOTECHNOLOGY

Course Objectives:

The course will help students to understand various applications of microbes for the development of various products of agriculture, industrial and clinical application. The knowledge of recombinant technology, bioreactors and optimization strategies will be beneficial in development of production processes.

Course learning outcomes: By the end of this course the students-

CO1: Will learn about various industrially relevant microbial products and their production process, role of biotechnology in environment management

CO2: Acquires knowledge about strains development, selection of hyper producers, microbial products, metabolic engineering and various industrial relevant microbial products and their production process

CO3: Learns about the designing of recombinant heterologous expression systems such as *E. coli*, yeast, mammalian and insect cells.

CO4: Learns about sterilization at reactor scale and different types of sterilization strategies

CO5: Attains knowledge about designing large scale industrial processes and types of cultivation strategies

CO6: Understands the concept of recombinant biomolecules, therapeutic proteins, vaccines**,** antibodies, bio-pesticides, bio-fertilizers, and probiotics

CO7: Understands different types of regulatory approvals required for drug development and difference between biologics, biosimilars and biobetters

THEORY COURSE
(3+1 Credits)

Unit-1	**Introduction to microbial biotechnology:** Biotechnology and its applications in microbial processes. Role of microbial biotechnology in environment management, Strains development, selection of hyper producers, microbial products, metabolic engineering in development of industrial products	**11 Lectures**
Uni-2	**Recombinant gene expression platforms:** Development of recombinant heterologous expression systems e.g. *E. coli*, yeast, mammalian and insect cells. Plant cells as bio-factories. Control parameters in stability of these expression platforms at industrial scale.	**11 Lectures**
Unit-3	**Development of microbial products**: Fermented milk products, probiotics, malt beverages, wines, distilled liquors, recombinant biomolecules and therapeutic proteins, vaccines production**,** DNA based vaccines, antibody production, therapeutic enzymes, industrially	**12 Lectures**

	important enzymes and green fuel production, Development of bio-pesticides and bio-fertilizers	
Unit-4	**Regulatory approvals and clinical trials:** *Good laboratory practice (GLP),* Current Good Manufacturing Practice (CGMP), different phases of clinical trials, difference between biologics, biosimilar and bio-better, development of biosimilars and generic biomolecules, analysis of process economics	**11Lectures**

Reference Book

1. Principles of Fermentation Technology by P. Stanbury, A. Whitaker, S. Hall. 3rd edition. Butterworth-Heinemann. 2016.
2. Modern Industrial Microbiology & Biotechnology by N. Okafor. 1st edition. CRC Press, USA. 2007.
3. Microbial Biotechnology: Fundamentals of Applied Microbiology by A.N. Glazer and H. Nikaido. 2nd edition. Cambridge University Press. 2007.
4. Pharmaceutical Biotechnology: Concepts and Applications by G. Walsh. John Wiley & Sons Ltd. 2007.
5. Pharmaceutical Biotechnology: Fundamentals and Applications by J.A.D. Crommelin, R. D. Sindelar, and B. Meibohm. 4thEdition. Springer. 2013.

General Elective

CH-32050

Analytical Chemistry (Credit 3+1)

Course objectives:

- IR spectroscopy for qualitative analysis
- Liquid Chromatography for separation
- To understand flame emission spectroscopy
- Atomic absorption spectroscopy
- Electrogravimetric analysis
- Water pollution analysis

Prerequisites:

- Vibrational transition and anharmonic oscillator
- Basic chromatography concepts
- Atomic structure and excitation energy
- Basis electrolysis process
- Water pollutants

Unit - I	**IR Spectrophotometry** IR Spectroscopy: Theory, Instrumentation: single beam, double beam spectrophotometers, radiation sources, sample cells, monochromators, detectors, sample handling, Resolution, wave number measurement, Useful terms: IR region, types of vibrations: fundamental and overtones, linear and nonlinear molecule, equation for vibrational frequency, selection rule, coupling interactions, hydrogen bonding information, Fermi resonance. IR spectra: group frequency, group frequency region, fingerprint region, spectra interpretations (Amino, carboxyls, hydroxyl, ethers groups containing compounds) and structure elucidation. FTIR: principle, instrument design, and function of beam splitter, Advantages of FTIR vs. IR.
Unit - II	**Liquid Chromatography** Introductory Classification, Phase polarity: Normal Versus reversed, LLC, LSC, Law Pressure Vs High Pressure Liquid Chromatography, Isocratic and Gradient Elution, Stationary Phase, Mobile Phase, Classification of HPLC mode in brief, Instrumentation, and significance of each component, Sample introduction System, Pumps, Guard column, Detectors: UV absorption, RI detectors.
Unit - III	**Atomic Spectroscopy** Flame Emission Spectroscopy Introduction, Principle, Flame and Flame Temperature, Excitation, Chemical reaction in flames, Ionisation in Flames, Spectra, Instrumentation, Evaluation method, Factors affecting emission, Interference, Application and Limitation. Atomic Absorption Spectroscopy Principal of AAS, Instrumentation, Hallow cathode Lamps, Sampling, Sample Introduction, Chemical interference, Application.

Reference Books

- Instrumental Method of Chemical Analysis by G. R. Chatwal and S. K. Anand
- Quantitative Analysis by R. A. Day & A. L. Underwood, 6 th ed. Pub. Prentice Hall of India ltd,.
- Analytical Chemistry by Gary D. Christian
- Instrumental Analysis by Willard, Merritt, Dean and Settle
- Vogel's Textbook of Quantitative Chemical Analysis, Fifth Edition.
- Chromatography Concept and Contrast, James M. Miller
- Instrumental Analysis by Skoog, Holler and Crouch
- Fundamental of Analytical Chemistry by Skoog, Haller and Crouch
- Spectroscopy by H. Kaur, Pragati Prakashan
- Introduction to Spectroscopy By Pavia, Lampman, Kriz, Vyvyan

Course outcomes:

- Able to understand IR spectral analysis
- Able to perform separation of liquid chromatography
- Able to understand quantitative atomic spectroscopy
- Able to perform electrogravimetry and water analysis.

Vanita Vishram Women's University
School of Commerce and Business Management
Course Code: CO31050
M.Com. Semester: II
Generic Elective Course: Office Management
Credit: 4 (Theory - 3 and Practical - 1)
w.e.f. A.Y. 2022-23

Objectives:

To help learners to:

- Understand the importance of their role in an organization.
- Manage telephone calls and emails efficiently and professionally.
- Demonstrate professionalism in the organisation.
- Perform a variety of office procedures.

Course Contents:

Module	Content	Weightage
1	**Introduction to Office Management:** • Meaning and importance of office • Nature and functions of office • Relationship of office with other departments • Functions-basic and auxiliary • Skills and role of an office manager **Office Administration:** • Concept of administrative office management • Objectives of administrative office management • Functions of administrative office manager	**20%**
2	**Office Layout:** • Office Layout and Working Condition • Location of office • Office building • Office layout-nature • Principles of Office Layout • Types of Office Layout • Open and private offices • Office Equipment & Furniture	**20%**
3	**Office Organization**: • Office Organization – Meaning & Definition • Principles of Office Organization • Types of Office Organization - line, line and staff and services Organization • Office charts and manuals	**20%**
4	**Office Communication:** • Basic Principles - Internal Communication and External communication • Handling Inward and Outward communication	**20%**

	• Mail Organization of the mailing section • Arrangements with post offices • Inward Mail routine • Dealing with correspondence • Outward mail routine • Mechanizing mail service.	
5	**Practical: Role Play, Task, Cases and Presentation:** The practical work includes: Operation of Office Machines and equipment; Creation of Email accounts and sending emails, online filling of simple forms; Two-minute speech on any general/subject related topic to be given to observe oral and non-verbal communication skills, telephone handling.	**20%**

Reference Books:

Sr. No.	Title	Author/s	Publication
1	Commercial Correspondence & Office Management	R.S.N.Pillai	S. Chand and Co.
2	Manual of Office Management and Correspondence	B.N.Tanon	S. Chand and Co.
3	Company law and Secretarial practice	Baig N	Sterling Publication
4	Office Organization and Management	R.K. Chopra	Himalaya publication house.
5	Office Management	Pillai R.S.N and Bagavath	S. Chand and Co
6	Office Management Principles and Practice	P.K. Ghosh	Sultan Chand & Sons

Course Outcomes:

After completion of the course, the student will be able to:

- Understand the importance of their role in an organization.
- Simplify telephone calls and emails efficiently and professionally.
- Adopt professionalism in the organisation.
- Formulate a variety of office procedures.

VANITA VISHRAM WOMEN'S UNIVERSITY
DEPARTMENT OF PSYCHOLOGY
Psychological First Aid

Course Learning Outcomes:

- Understanding the importance of Mental Health.
- Recognizing the requirement of help during a crisis.
- To build the capacity of helpers in crisis situations.
- To prepare helpers to support people recently affected by very stressful events.
- To provide opportunity for participants to develop and practice Psychological First Aid and Skills for Psychological Recovery skills.

Unit - I	**Psychology and Mental Health** 1.1. Concept of Mental Health 1.2. Importance of mental health, Identifying mental health challenges to help reduce the stigma of mentalillness 1.3. Issues of mental health in India and the globe: Some common conditions and their epidemiology 1.4. Anxiety, Depression and Post-traumatic Stress Disorder.
Unit - II	**Psychological First Aid: Definition And Framework** 2.1 Introduction to Psychological First Aid 2.2 Applying Psychological First Aid Action Principles: Look, Listen and Link 2.3 Utilizing the RAPID model 2.4 Adapting to the local cultural context
Unit - III	**Psychological First Aid Role Plays, Vulnerable People, Psychological First Aid Review, Self andTeam Care, Evaluation** 3.1 Identifying people needing special attention 3.2 Ethical do's and don'ts 3.3 Self and team care 3.4 Evaluation and closing
Unit - IV	**Skills for Psychological Recovery** 4.1 Introduction to Psychological Recovery 4.2 Core Skills for Psychological Recovery 4.3 Applying Skills for Psychological Recovery skills 4.4 Enhancing motivation and Preventing setbacks

Reference Books:

World Health Organization. (2013). Psychological first aid: Facilitator's manual for orienting Field workers (PDF).

Berkowitz, S., Bryant, R., Brymer, M., Hamblen, J., Jacobs, A., Layne, C., Macy, R., Osofsky, H., Pynoos, R., Ruzek, J., Steinberg, A., Vernberg, E., & Watson, P. (2010). The National Center for PTSD & the National Child Traumatic Stress Network, Skills for Psychological Recovery: Field Operations Guide.

Butcher, J.N., Hooly, J. M, Mineka, S. & Dwivedi, C.B (2017). Abnormal Psychology. New Delhi: Pearson.

Muir-Cochrane, E., Barkway, P. & Nizette, D. (2018). Pocketbook of Mental Health (3rd Edition). Elsevier

Morgan, C T., King, R., Weisz, J. & Schopler, J. (2017) .Introduction to Psychology (7th Ed). McGraw Hills.

VANITA VISHRAM WOMEN'S UNIVERSITY
SCHOOL OF HUMANITIES AND SOCIAL SCIENCES
DEPARTMENT OF ENGLISH
SEMESTER 2 (PG)
GENERIC ELECTIVE
Course Code: EN32010
Course Name: Advanced Academic Writing and Soft Skills
Credit: 4 (Theory - 3 and Practical - 1)

Course Objectives:

To help learners to:

- develop skills of research composition, argument, reviewing, synthesizing and content development
- get trained for writing an effective dissertation using data collection tools
- improve their writing skill for higher studies and academic endeavours
- get trained in the communicative aspect of language
- inculcate and represent the employability skills
- learn, practice and acquire the skills necessary to deliver effective, presentation with clarity and impact.

Course Outcomes

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

- implement effective presentation strategies
- know strategies of Effective Academic writing
- demonstrate research skills appropriate to advanced post graduate level
- know and use data collection tools
- learn the nuances of content writing
- deal with nerves and think more positively about public speaking.

Course Content:

Module	Content
1.	**Academic Writing** • Content Development for Academic Writing • Paraphrasing, Summarizing, Reviewing, Synthesizing • Preparing Data Collection Tools • Preparing Effective Dissertation • Referencing and Citation • Plagiarism and Intellectual Property Rights
2.	**Soft Skills** **A. Presentation skills** • Specifying Objectives • Planning • Preparation

	• Practice and Rehearsal • Dressing Etiquettes • Making the Presentation • Paralinguistic elements in Presentation **B. Public Speaking** • Speeches: Academic, Social and Commercial
3.	**Employability Skills** • Group Discussion • Interview Skills • Cover Letter & Resume Building

Reference Books:

Sr. No.	Title	Author/s	Publication
1	Academic Writing- A handbook for International Students	Stephen Bailey	Routledge
2	Becoming an Academic Writer: 50 Exercises for Paced, Productive and Powerful Writing	Patricia Goodson	Sage
3	Effective Academic Writing- Second Edition	Alice Savage	Oxford
4	Effective Communication and Soft Skills	Nitin Bhatnagar	Pearson Education India
5	The Oxford Guide to Writing and Speaking	John Seely	Oxford
6	Basic Business Communication: Skills for empowering the internet generation	Raymond V. Lesikar, Marie E. Flatley.	McGraw-Hill
7	English for Competitive Examinations	-R. P. Bhatnagar et al	Macmillan
8	Essentials of Business Communication	Rajendra Pal	Sultan Chand & Sons, New Delhi
9	Business Communication	Urmila Rai and S.M. Rai	Himalaya Publishing House, New Delhi
10	Soft Skills and Professional Communication	Petes S. J., Francis.	Tata McGraw-Hill Education, 2011