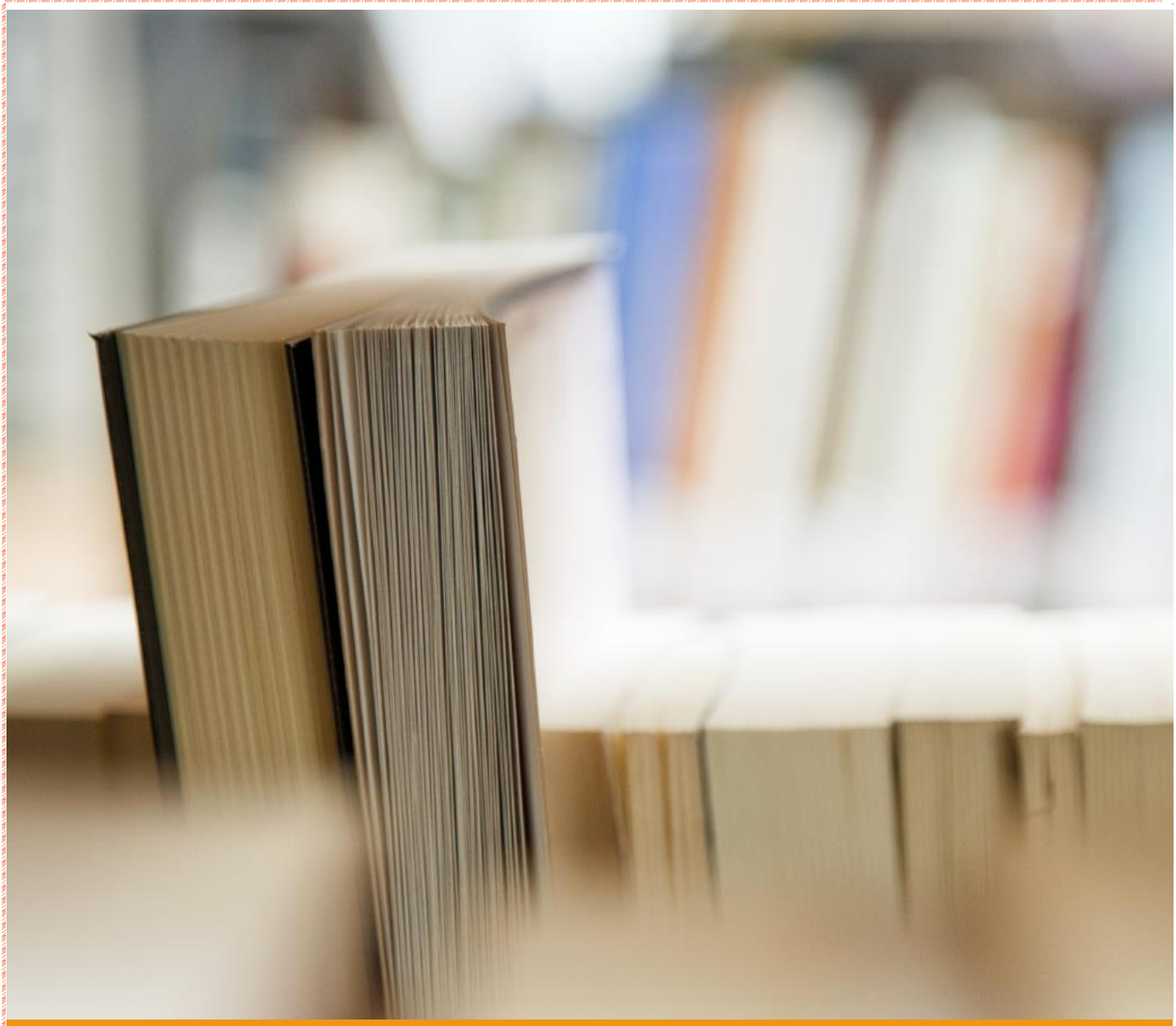

SGRR UNIVERSITY

Brochure of Value-Added Courses
School of Pharmaceutical Sciences
2022-2023

ABOUT THE UNIVERSITY

Shri Guru Ram Rai University was established by a religious and philanthropic leader, Shri Mahant Devendra Dass Ji Maharaj in the year 2017. It is situated in the heart of city, Uttarakhand. We are extremely privileged to extend the values and ethos of the Shri Guru Ram Rai Education mission through SGRR University to impart quality education and in successfully placing more than 80% students in various companies across the globe. SGRR University has humongous campus spread over 80 acres of land. Its state-of-art facilities give opportunities to develop leadership skills and to achieve professional excellence. It has 8500+ students from different countries, 29 states and Union Territories and providing cultural melange and global exposure to our students. One of the biggest boosts from University is its unmatched experience of 67 years of in delivering quality education that helps to develop confidence and will give you more knowledge, industry exposure, building good networking and high self-esteem. This will change your overall personality and develop you into a complete professional to face any challenge.

Vision

"To establish Sri Guru Ram Rai University to be a Center of Excellence in higher education, innovation and social transformation by nurturing inquisitive and creative minds and by enabling the stakeholders to become committed professionals and educators of national and global relevance."

Mission

- To provide a comprehensive and sustainable educational experience that fosters the spirit of enquiry, scientific thinking and professional competence along with ethical and spiritual values
- To deliver a classic, well rounded learning experience that is distinctive and impactful on the young generation preparing them for a successful career
- To engage, inspire and challenge the stakeholders to become leaders with ethics and positive contributors to their chosen field and humane citizens
- To attract, train and retrain qualified staff to work efficiently to bring forth the maximum resource potential

- To develop committed and responsible professionals who work for the welfare of the society by providing innovative and efficient solutions and creating long term relationship with the stakeholders

- To create a sustainable career, by collaborating with stakeholders and participating in community partnership for life and livelihood in the local society in a responsive and dynamic way

- To make our students globally competent by introducing specialized training leading to professional capabilities and developing diverse skills in them for competitive advantage.

- To establish quality standards for generations by epitomising professionalism and integrity while raising the achievements of students.

- To ceaselessly pursue excellence by strengthening a learning environment that makes the institution the most preferred destination in the country.

Index

INTRODUCTION

The ever-changing global scenario makes the world more modest and needs high levels of lateral thinking and the spirit of entrepreneurship to cope up with the emergent challenges. Many a times, the defined skill sets that are being imparted to students today with Programme Specific Objectives in educational institutions become redundant sooner or later due to rapid technological advancements. No university curriculum can adequately cover all areas of importance or relevance. It is important for higher education institutions to supplement the curriculum to make students better prepared to meet industry demands as well as develop their own interests and aptitudes.

Objectives The main objectives of the Value-Added Course are:

- ✓ To provide students an understanding of the expectations of industry.
- ✓ To improve employability skills of students.
- ✓ To bridge the skill gaps and make students industry ready.
- ✓ To provide an opportunity to students to develop inter-disciplinary skills.
- ✓ To mould students as job providers rather than job seekers.

Course Designing The department interested in designing a Value Added Course should undertake Training Need Analysis, discuss with the generic employers, alumni and industrial experts to identify the gaps and emerging trends before designing the syllabus.

Conduction of value added courses :

Value Added Course is not mandatory to qualify for any programme and the credits earned through the Value-Added Courses shall be over and above the total credit requirement prescribed in the curriculum for the award of the degree. It is a teacher assisted learning course open to all students without any additional fee.

Classes for a VAC are conducted during the RESERVED Time Slot in a week or beyond the regular class hours The value-added courses may be also conducted during weekends / vacation period. A student will be permitted to register only one Value Added Course in a Semester.

student will be encouraged to opt for the VAC offered by his/her parent Department/Faculty. Industry Experts / Eminent Academicians from other Institutes are eligible to offer the value-added course. The course can be offered only if there are at least 5 students opting for it. The students may be allowed to take value added courses offered by other departments after obtaining permission from Dean offering the course. The duration of value added course is 30 hours with a combination 18 hours (60%) of theory and 12 hours (40%) of practical. However,

the combination of theory and practical shall be decided by the course teacher with the approval of the Dean

GUIDELINES FOR CONDUCTING VALUE ADDED COURSES

- Value Added Course is not mandatory to qualify for any program.
- It is a instructor supported learning course open to all students without any added fee.
- Classes for VAC will be conducted during the **RESERVED** Time Slot in a week or beyond the regular class hours.
- The value-added courses may be also conducted during weekends / vacation period.
- A student will be permitted to register only one Value Added Course in a Semester.
- Students may be permitted to enrol in value-added courses offered by other departments/ Schools after obtaining permission from the Department's Head offering the course.

DURATION AND VENUE

- The duration of value-added course should not be less than 30 hours.
- The Dean of the respective School shall provide class room/s based on the number of students/batches.
- VAC shall be conducted in the respective School itself.

REGISTRATION PROCEDURE

The list of Value-Added Courses, along with the syllabus, will be available on the University Website. A student must register for a Value-Added Course offered during the semester by completing and submitting the registration form. The Department Head shall segregate according to the option chosen and send it to the Dean of the school offering the specific Value-Added Courses.

- Each faculty member in charge of a course is responsible for maintaining Attendance and Assessment Records for candidates who have registered for the course.
- The Record must include information about the students' attendance and Assignments, seminars, and other activities that were carried out.

- The record shall be signed by the Course Instructor and the Head of the Department at the end of the semester and kept in safe custody for future verification.

- Each student must have a minimum of 75% attendance in all courses for the semester in order to be eligible to take certificate.

- Attendance requirements may be relaxed by up to 10% for valid reasons such as illness, representing the University in extracurricular activities, and participation in NCC.

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

Social health and nutrition

Course Code: VACSPS004

Course Objectives:

- To appreciate the importance of balanced diet.
- To understand the food and nutritional requirements of adults.
- To understand the role of nutrition in weight management, diabetes and cardiovascular disease.
- Knowledge about nutrients in food and their functions.
- Understand the consequences of deficiency of taking nutrients.
- Comprehensive knowledge on the role of nutrients in different stages of human life.
- Knowledge about the different methods of nutritional assessment.

Course Outcomes:

- Utilize knowledge from the physical and biological sciences as a basis forunderstanding the role of food and nutrients in health.
- Students will be able to understand the information to food science and nutrition.
- Apply food science knowledge to describe functions of ingredients infood.
- Gain knowledge about food pyramid, vegetarian diet, menu planning andnutritional needs during infancy to adolescents.

Course Content:

Module I:

Introduction to food, health and nutrition: Explanation of terms- Definition, concept and meaning of health and factors affecting health, Nutrient requirement, Dietary standards,Balanced diet, Food Groups,Functions of food, Food Guides-Food pyramid andMyplate, Food in relation tohealth.Food a prerequisite to health,

Module II:

Nutritional Needs: Nutrition during infancy, childhood, adolescence and adult, Nutrition during pregnancy& lactation, Nutrition in later maturity period,Nutritional requirements and RDA,Nutrition and infection, Nutrition and immunity, nutrition & stress.

Module III:

Food Composition and its Classification Food as a source of nutrients: classification of nutrients; functions, recommended dietary allowances, BMR, SDA. Vitamins: (A,B complex, C, D, E & K) & all major and minor mineral elements with their role in

body, importance of Roughages in the diet,Water & electrolytes balance.Food composition and nutritive values of differentfoods, Functions of foods, Balanced Diet.

Module IV:

Community Nutrition Macronutrients and micronutrients – Carbohydrates, protein, fats, vitamins (A, D, E,K, C and B complex) and minerals (Calcium, phosphorous, sodium, Iron, zinc, Iodineand fluorine)

Methods of Assessment: Direct and Indirect methods of Nutritional assessment ofhuman groups, Techniques for assessment of age and use of reference standards for theassessment of nutritional status.Government Nutrition Programmes- ICDS and Mid-Day Meal Programme (MDMP).

References:

- SwaminathanM(2007): Essentials of Food and Nutrition(Vol. I & II), 2nd Ed. Bappco.
- Meyer LH (2004): Food Chemistry, CBS Publishers & Distributors.
- Mann J and TruswellS(2017): Essentials of Human Nutrition, 5th Ed. Oxford UniversityPress.
- Pandya R(2010):Community Health Education, Rawat Publications.
- Bamji, M.S., Rao, N.P & Reddy, V. (1996). Textbook of Human Nutrition. Oxford &IBH Publishing Co. (P). Ltd. Delhi.
- Gopalan, G. RamaShastri B.V &Balasuvramnian, S.C. (2000). Nutritive Value of Indian
- Foods. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad500-007, India.
- Sri Lakshmi, B. (2000). Nutrition Science. New Age International (P) Ltd. Pub. New Delhi
- Swaminathan, M. (2009). Textbook of Food and Nutrition. Bappco Publishers, Bangalore.

RESEARCH PAPER WRITING

Course Code: VACSPS005

Course Objectives:

- To understand how to introduce the research problem.
- To understand how to develop the literature review.
- To understand what to include in the research plan.
- To understand what to include in the Method section of a research paper (participants, materials, procedure)
- To achieve and explore academic and research goals.
- Identify and recommend appropriate sources of scientific research information (e.g peer-reviewed journals)
- To be able to clearly and simply state the hypothesis and/or research goal(s) and specific objectives of their project.
- To assemble results of experiments, compose figures and/or tables, organize manuscript in standard scientific format, and provide interpretations in the context of existing knowledge.

Course Outcomes:

- Understand that how to improve your writing skills and level of readability.
- Learn about what to write in each section.
- Understand the skills needed when writing a good quality of paper at very first-time submission.
- Understand how to critically analyze data from research; incorporate it into assigned writing clearly, concisely, and logically; and attribute the source with proper citation.
- Understand the current resources (such as search engines and databases) for locating secondary information, and also understand the strategies of effective primary data gathering.

Course Content:

Module I:

Research paper writing: Types of research paper, Structure of research paper, Research paper format, Abstract writing, Methodology, Results and discussion, different format of referencing, ways of communicating a research paper.

Module II:

Thesis writing: Structure of thesis, Scope of work, Literature review, Experimental/Computational details, primarily studies, Results and discussion, Figures and Tables preparation, conclusion and future works, Bibliography, Appendices.

Module III:

Crediting Sources: Paraphrasing, Quotations, Permission to quote, Reprint, or adapt, Referencing.

Module IV:

Tools and Techniques: Various word processors e.g., MS Word, Libra-office, Latex etc., Making effective presentation using Power point and Beamer, Uses of plagiarism detection tools.

References:

- Adrian Wall work, English for Writing Research Papers, Springer New York Dordrecht Heidelberg London, 2011Highman N,
- Handbook of Writing for the Mathematical Sciences, SIAM. Highman's ok 1998.
- Kothari, C. R. (2004). Research Methodology: Methods and Techniques. New Delhi: New Age International.
- Kumar, R. (2005). Research Methodology-A Step-by-Step Guide for. Singapore: Pearson Education.
- Saravanavel, P. (2012). Research Methodology. Allahabad: Kitab Mahal Publishers.

BASICS OF FIRST AID

Course Code: VACSPS006

Course Objectives:

The course on Basics of First Aid aims to equip participants with essential skills and knowledge to respond effectively in emergency situations. Throughout the program, participants will develop a fundamental understanding of life-saving techniques, including cardiopulmonary resuscitation (CPR), wound care, and fracture management. The objectives also include instructing participants on how to assess and prioritize injuries, recognize signs of common medical emergencies, and administer appropriate first aid measures. By the end of the course, participants should feel confident in their ability to provide immediate assistance in various emergency scenarios, promoting a safer environment and potentially saving lives. Additionally, the course emphasizes the importance of quick decision-making, clear communication, and empathy when dealing with individuals in distress.

Course Outcome:

After this course participants will be able to:

- **CO1**Successfully perform hands-only CPR on a manikin, including proper hand placement and compression depth.
- **CO2** Emphasize the significance of providing prompt and appropriate first aid to minimize complications.
- **CO3** Emphasize the significance of providing prompt and appropriate first aid to minimize complications.
- **CO4** Apply legal and ethical considerations when providing first aid in various scenarios.

Course Content:

Module I:

Introduction to First Aid-Definition and Importance of First Aid, Legal and Ethical Considerations in First Aid, Role, Responsibilities of a First Aider

Module II:

Basic Life Support (BLS)-Cardiopulmonary Resuscitation (CPR), Airway Management, Recognition and Response to Respiratory Emergencies

Module III:

Wound Care and Bleeding Control- Types of Wounds and Their Assessment, Principles of Wound Cleaning, Dressing and Techniques for Bleeding Control

Module IV:

Fracture Management and Musculoskeletal Injuries- Recognizing Fractures and Dislocations, Immobilization Techniques and Soft Tissue Injuries and Joint Support

Module V:

Medical Emergencies and First Aid in Special Situation- Recognizing Signs of Common Medical Emergencies (e.g., heart attack, stroke), First Aid for Poisoning, Allergic Reactions and First Aid in Special Settings (e.g., wilderness, sports events)

References:

- First Aid Manual" by the American College of Emergency Physicians
- First Aid for the USMLE Step 1" by Tao Le and Vikas Bhushan
- First Aid, CPR and AED Guide" by Alton L. Thygerson and Steven M. Thygerson
- Emergency First Aid" by DK Publishing
- The Complete Idiot's Guide to First Aid Basics" by Nadine Saubers.

COMPUTER APPLICATIONS IN PHARMACY

Course Code: VACSPS007

Course Objectives:

This Course deals with the introduction Database, Database Management system, computer application in clinical studies and use of databases. Upon completion of the course the student shall be able to

- know the various types of application of computers in pharmacy
- know the various types of databases
- know the various applications of databases in pharmacy

Course Outcome:

After this course participants will be able to:

- Appreciate the importance of accurate and efficient software usage in pharmacy operations.
- Emphasize the ethical responsibility of safeguarding sensitive information in a pharmacy setting.
- Recognize the significance of data analysis in supporting evidence-based decision-making in pharmacy research.
- Understand the legal and ethical considerations related to the use of computer applications in pharmacy.
- Apply data analysis tools to interpret and analyze pharmaceutical data sets.

Course Content:

Module I:

Number system-Binary number system, Decimal number system, Octalnumber system, Hexadecimal number systems, conversion decimal tobinary, binary to decimal, octal to binary etc., binary addition, subtraction – One's complement, Two's complement method, binary multiplication, binary division.

Module II:

Web technologies- Introduction to HTML, XML,CSS and Programming languages, introduction to web servers and Server, Products Introduction to databases, MYSQL, MS ACCESS, Pharmacy Drug database.

Module III:

Application of computers in Pharmacy-Drug information storage and retrieval, Pharmacokinetics, Mathematical model in Drug design, Hospitaland Clinical Pharmacy, Electronic Prescribing and discharge (EP) systems

Module IV:

Bioinformatics-Introduction, Objective of Bioinformatics, Bioinformatics Databases, Concept of Bioinformatics, Impact of Bioinformatics in VaccineDiscovery

Module V:

Computers as data analysis in Preclinical Development-Chromatographic dada analysis (CDS), Laboratory Information management, System (LIMS) and Text Information Management System (TIMS)

References:

- Computer Application in Pharmacy William E.FassettLea and Febiger, 600South Washington Square, USA, (215) 922-1330.
- Computer Application in Pharmaceutical Research and Development Sean Ekins Wiley- Inter science, A John Willey and Sons, INC., Publication, USA
- Bioinformatics (Concept, Skills and Applications) -S.C. Rastogi-CBS Publishers and Distributors.
- Microsoft office Access-2003, Application Development Using VBA, SQL Server, DAP and InfoPath.

BASICS OF LANGUAGE OF SCIENCE/COMMUNICATION SKILLS IN PHARMACY

Course Code: VACSPS008

Course Objectives

This course is designed to impart fundamental knowledge on various Good Regulatory Practices viz., cGMP, GLP, GALP and GDP for Pharmaceuticals, Cosmetics, Food & Nutraceuticals, Medical devices, In-vitro Diagnostic Medical Devices (IVDs) and biological products and understand the rationale behind these requirements and will propose ways and means of complying with them.

Course Outcome:

After this course participants will be able to:

- Assess and recall key terms, concepts, and historical developments in drug regulatory affairs.
- Compare and contrast regulatory systems in different countries, understanding the similarities and differences
- Demonstrate an ability to navigate regulatory guidelines and apply them to different stages of drug development.
- Evaluate the ethical implications of regulatory decisions and understand the legal responsibilities of pharmaceutical companies.
- Create strategies for effective communication with regulatory agencies, including preparing for regulatory meetings and addressing queries.

Course Content:

Module I:

Current Good Manufacturing Practices-Introduction, US cGMPPart 210 and Part 211.EC Principles of GMP (Directive91/356/EEC) Article 6 to Article 14 and WHO cGMP guidelinesGAMP-5

Module II:

Good Laboratory Practices: Introduction-USFDA GLP Regulations (Subpart A to Subpart K), Controlling the GLPinspection process, Documentation, Audit, goals of Laboratory

Quality Audit, Audit tools, Future of GLP regulations, relevant ISOand Quality Council of India (QCI) Standards

Module III:

Good Automated Laboratory Practices-Introduction to GALP,Principles of GALP, GALP Requirements, SOPs of GALP,Training Documentation,21 CFR Part 11, General check list of21CFR Part 11,

Module IV:

Good Distribution Practices-Introduction to GDP, Legal GDPrequirements put worldwide, Principles, Personnel, Documentation, Premises and Equipment, Deliveries to Customers, Returns, Self-Inspection, Provision of information, Stability testing principles, WHO GDP, USP GDP (Supply chainintegrity), relevant CDSCO guidance and ISO standards

Module V:

Quality management systems- Concept of Quality, Total Quality Management, Quality by design, Six Sigma concept, Out of Specifications (OOS), Change control. Validation: Types of Validation,

References:

- Good Laboratory Practice Regulations, by Sandy Weinberg, Fourth Edition Drugs and the Pharmaceutical Sciences, Vol.168
- Good Pharmaceutical Manufacturing practice, Rational and compliance by
- John Sharp, CRC Press Establishing a cGMP Laboratory Audit System, A practical Guide by David M.Bleisner, Wiley Publication.
- How to practice GLP by PP Sharma, Vandana Publications.
- Laboratory Auditing for Quality and Regulatory compliance by DonaldC.Singer, Drugs and the Pharmaceutical Sciences, Vol.150.
- Drugs & Cosmetics Act, Rules & Amendments

REGULATORY AFFAIRS

Course Code: VACSPS009

Course Objectives:

This course is designed to impart fundamental knowledge on various Good Regulatory Practices viz., cGMP, GLP, GALP and GDP for Pharmaceuticals, Cosmetics, Food & Nutraceuticals, Medical devices, In-vitro Diagnostic Medical Devices (IVDs) and biological products and understand the rationale behind these requirements and will propose ways and means of complying with them. Students will able to understand, the key regulatory and compliance elements with respect to Good Manufacturing Practices, Good Laboratory Practices, Good Automated Laboratory Practices and Good Documentation Practices and also prepare and implement the check lists and SOPs for various Good Regulatory Practices Implement Good Regulatory Practices in the Healthcare and related Industries Prepare for the readiness and conduct of audits and inspections.

Course Outcome:

After this course participants will be able to:

- Demonstrate culturally sensitive and ethical communication practices in various pharmacy-related scenarios.
- Analyze the importance of collaboration and communication within an interprofessional healthcare team.
  Understand the principles of patient-centered communication in a healthcare setting.
- Analyze the importance of effective verbal communication in pharmacy practice.
- Apply critical thinking skills to navigate and evaluate scientific articles, research papers, and drug information resources.

Course Content:

Module I:

Introduction to Scientific Language in Pharmacy-Basics of Scientific Terminology, Pronunciation and Usage.

Module II:

Written Communication Skills in Pharmacy-Principles of Effective Writing, Writing Professional Documents.

Module III:

Oral Communication in Pharmacy-Importance of Verbal Communication, Patient Counselling and Communication.

Module IV:

Scientific Literature and Drug Information-Types of Scientific Literature, Navigating Drug Information Resources.

Module V:

Patient-Centered Communication and Cultural Competence- Principles of Patient-Centered Communication, Cultural Competence in Pharmacy Communication.

Module VI:

Inter professional Communication in Healthcare-Collaboration in Healthcare Teams, Effective Communication with Healthcare Professionals.

Module VII:

Technology in Pharmacy Communication-Role of Technology in Pharmacy Communication, Utilizing Electronic Health Records (EHR) and Communication.

References:

- The Pharmacy Technician's Pocket Drug Reference" by Joyce A. Generali
- Communication Skills for Pharmacists: Building Relationships, Improving Patient Care" by Bruce A. Berger and Amy M. Donnelly
- The Complete Guide to Medical Writing" by Mark C. Stuart
- Pharmacy Ethics and Decision Making" by Joy Wingfield
- Patient Communication for Pharmacy: A Case-Study Approach on Theory and Practice" by MarkN. Desselle and Zaheer-Ud-Din Babar.

PATENT DRAFTING FOR BEGINNERS

SHRI GURU RAM RAI UNIVERSITY
Quest for Excellence

Course Code: VACSPS010

Course Objectives:

The course on Patent Drafting for Beginners aims to provide participants with fundamental skills in crafting effective and legally sound patent applications. Objectives include introducing participants to the basics of patent law, enabling them to understand patentability criteria, and guiding them through the essential components of a patent application. Participants will learn how to draft clear and concise patent claims, describe inventions comprehensively, and navigate the intricacies of patent language. The course seeks to equip beginners with the knowledge and practical techniques required to create well-structured and persuasive patent drafts. Additionally, emphasis is placed on fostering an understanding of patent office procedures and the importance of precision in language to protect intellectual property effectively. Overall, the objectives aim to empower participants to embark on the process of patent drafting with confidence and foundational proficiency.

Course Outcomes:

At the end of the course students will able to.

- Recall the fundamental principles of patent law, including the criteria for patentability and the rights conferred by a patent.
- Memorize the essential components of a patent application, such as claims, drawings, and the specification.
- Understand the importance of precision in language when drafting patent applications to accurately and clearly describe an invention.
- Interpret the legal terminology commonly used in patent documents and comprehend its significance in patent drafting.
- Apply drafting techniques to formulate clear and concise patent claims that accurately capture the inventive concept.

Course content:

Module I:

Introduction to Patent Law and Basics- Overview of Intellectual Property and Patents, Fundamentals of Patent Law

Module II:

Components of a Patent Application- Structure of a Patent Application, Drafting Detailed Patent Claims

Module III:

Description and Drawings- Describing the Invention, Importance of Patent Drawings

Module IV:

Patent Language and Terminology- Precision in Patent Language, Legal Terminology in Patent Drafting

Module V:

Practical Application and Review- Drafting Simple Patent Applications, Overview of Patent Office Procedures

References:

- "Patent It Yourself" by David Pressman and Thomas Tuytschaevers
- "Patent Drafting: A Practical Guide" by Herbert D. Hart III
- "Drafting Patents for Litigation and Licensing" by Roger M. Milgrim
- "Patent Law: A Practitioner's Guide" by Siegrid B. Zucker
- "Patent Pending In 24 Hours" by Richard Stim and David Presman

INTERPRETATION OF IR SPECTRA

Course Code: VACSPS011

Course Objectives:

This course is designed to provide students with an in-depth understanding of infrared (IR) spectroscopy and its application in the interpretation of molecular structures. Through a combination of theoretical concepts, hands-on practical sessions, and case studies, students will develop the skills necessary to analyze and interpret IR spectra effectively.

Course Outcome:

After this course participants will be able to:

- Explain the relationship between molecular vibrations and IR absorption
- Analyze and interpret IR spectra of simple organic compounds
  Apply deconvolution methods to resolve overlapping bands in complex spectra
- Understand the concept of molecular vibrations and their correlation with IR absorption
- Correlate specific spectral features with isomerism and conformational differences.

Course Content:

Module I:

Basics of Spectroscopy-Introduction to spectroscopic techniques, Electromagnetic spectrum and the IR region, Interaction of radiation with matter.

Module II:

Principles of Infrared Spectroscopy-Vibrational transitions in molecules, Types of molecular vibrations (stretching, bending),Selection rules for IR absorption.

Module III:

IR Spectrometers and Sample Handling-Components of an IR spectrometer, Different types of IR instruments, Sample preparation techniques.

Module IV:

Functional Groups and Their IR Absorptions-Identification of functional groups, Correlation between IR bands and molecular structures.

Module V:

Depth Analysis of IR Spectra-Resolution enhancement techniques, Deconvolution of overlapping bands.

Module VI:

Research Seminar-Guest lectures from experts in the field Student presentations on selected research papers.

Module VII:

Advanced Topics in IR Spectroscopy-In-Depth Analysis of IR Spectra, Resolution enhancement techniques, Deconvolution of overlapping bands.

References:

- Infrared and Raman Spectroscopy: Principles and Spectral Interpretationby Peter Larkin.
- Introduction to Spectroscopyby Donald L. Pavia, Gary M. Lampman, George S. Kriz, and James R. Vyvyan.
- Scientific articles and research papers on advanced IR spectroscopy techniques.
- Infrared and Raman Spectroscopy: Principles and Spectral Interpretationby Peter Larkin.
- Infrared Spectroscopy: Fundamentals and Applicationsby Barbara H. Stuart.

OTC DISPENSING

Course Code: VACSPS012

Course Objectives:

The course on Over-the-Counter (OTC) Dispensing aims to equip participants with the essential skills and knowledge required for the responsible and effective provision of non-prescription medications and healthcare products. Objectives include developing a comprehensive understanding of common OTC medications, their indications, and potential interactions. Participants will learn proper dispensing practices, emphasizing patient education on medication usage, dosage, and potential side effects. The course seeks to instill proficiency in recognizing situations that require referral to healthcare professionals and ensuring compliance with regulatory and ethical standards in OTC dispensing. Overall, the objectives are designed to empower participants to play a vital role in promoting safe and informed self-medication practices within the community.

Course Outcomes:

At the end of the course students will able to..

- Recall the regulatory framework governing OTC medications, including legal and ethical considerations in dispensing practices.
- Memorize the different categories of OTC medications, their common uses, and potential interactions.
- Understand the importance of responsible OTC dispensing in promoting self-care and patient well-being..
- Interpret patient symptoms and health conditions to determine appropriate OTC recommendations.
- Apply dispensing practices for common OTC medications, considering factors such as dosage, administration, and potential side effects.

Course content:

Module I:

Introduction to OTC Medications- Overview of OTC Medications, Role of OTC Dispensing,

MODULE II:

Common OTC Medications- Analgesics and Antipyretics, Gastrointestinal Medications

Module III:

Cold and Allergy Medications- Decongestants and Antihistamines, Cough Suppressants and Expectorants

Module IV:

Dermatological and Topical Medications- Skincare Products, Topical Analgesics and Anti-inflammatory preparations.

Module V:

Responsible OTC Dispensing Practices- Patient Consultation and Education, Referral and Regulatory Compliance

References:

- "Handbook of Nonprescription Drugs: An Interactive Approach to Self-Care" by Daniel L. Krinsky, Stefanie P. Ferreri, et al.
- "OTC Medications: A Guide for Pharmacists" by Don N. Brown, Michael S. Maddux, and Laura C. Brown
- "Self-Care: A Guide to OTC Products" by Deanne Liska
- "Nonprescription Product Therapeutics" by W. Steven Pray

DIETARY SUPPLEMENTS

Course Code: VACSPS013

Course Objectives:

The course on Dietary Supplements aims to provide participants with a comprehensive understanding of the role, benefits, and risks associated with dietary supplements. Objectives include fostering knowledge of various types of supplements, their nutritional components, and potential interactions. Participants will learn to critically evaluate scientific evidence supporting supplement claims and assess the regulatory landscape surrounding dietary supplements. The course seeks to empower individuals to make informed decisions about supplement use, considering factors such as individual health goals, safety, and efficacy. Additionally, participants will explore the importance of professional communication in providing evidence-based advice on supplement usage and navigating ethical considerations in the promotion and dispensing of dietary supplements. Overall, the course objectives aim to equip participants with the knowledge and skills necessary for responsible and informed engagement with dietary supplements in both personal and professional contexts.

Course Outcomes:

At the end of the course students will able to.

- Recall the classification of dietary supplements, including vitamins, minerals, herbs, and other nutritional components.
- Memorize the regulatory framework governing the production, labeling, and marketing of dietary supplements.
- Understand the roles and functions of essential vitamins and minerals in the human body.
- Interpret the potential benefits and risks associated with commonly used herbal and botanical supplements.

Course content:

Module I:

Introduction to Dietary Supplements- Definition and Types of Dietary Supplements, Regulatory Landscape,

Module II:

Nutrients in Dietary Supplements- Essential Vitamins, Essential Minerals

Module III:

Herbal and Botanical Supplements- Commonly Used Herbs, Botanical Supplements and Extracts

Module IV:

Evaluating Dietary Supplement Claims- Scientific Evidence and Research, Safety and Interactions

Module V:

Responsible Use and Professional Communication- Informed Decision-Making, Ethical Considerations in Supplement Promotion

References:

- "The Supplement Handbook: A Trusted Expert's Guide to What Works & What's Worthless for More Than 200 Ailments" by Mark Moyad
- "The New Optimum Nutrition Bible" by Patrick Holford
- "Herbal Medicine: Biomolecular and Clinical Aspects" edited by Iris F. F. Benzie and Sissi Wachtel-Galor
- "Nutrient Timing: The Future of Sports Nutrition" by John Ivy and Robert Portman

MEDICINAL PLANTS IN SOCIETY

Course Code: VACSPS014

Course Objectives:

The course on Medicinal Plants in Society aims to provide participants with a deep understanding of the cultural, historical, and practical dimensions of medicinal plants. Objectives include exploring the diverse uses of medicinal plants in traditional and modern healthcare systems, understanding their roles in different cultures and societies, and evaluating the scientific basis for their medicinal properties. Participants will also learn sustainable harvesting practices, ethical considerations in herbal medicine, and the importance of preserving traditional knowledge. The course seeks to empower individuals to make informed decisions about the use of medicinal plants, considering both traditional wisdom and contemporary scientific evidence. Additionally, participants will explore the economic and environmental aspects of medicinal plant cultivation and trade, fostering a holistic understanding of the role of medicinal plants in society.

Course Outcomes:

At the end of the course students will able to.

- Recall the historical significance of medicinal plants in various cultures, recognizing their traditional roles in healing practices
- Memorize the botanical characteristics and identification features of key medicinal plants.
- Understand the socio-cultural contexts that influence the use of medicinal plants,
- Interpret the scientific principles underlying the therapeutic properties of medicinal plants.
- Apply ethno-botanical research methodologies to investigate the traditional knowledge and practices
- Implement sustainable harvesting and cultivation practices for medicinal plants

Course content:

Module I:

Introduction to Medicinal Plants- Overview of Medicinal Plants, Traditional Healing Systems

Module II:

Botanical and Phytochemical Foundations- Botanical Identification, Phytochemicals and Medicinal Properties

Module III:

Ethnobotany and Sociocultural Context- Ethnobotanical Studies, Sociocultural Impact of Medicinal Plants

Module IV:

Sustainable Harvesting and Conservation- Sustainable Harvesting Practices, Cultivation and Domestication

Module V:

Modern Applications and Challenges- Scientific Validation of Traditional Knowledge, Challenges and Opportunities

References:

- "The Modern Herbal Dispensatory: A Medicine-Making Guide" by Thomas Easley and Steven Horne
- "Herbal Medicine from the Heart of the Earth" by Sharol Marie Tilgner
- "Medicinal Plants: Traditions of Yesterday and Drugs of Tomorrow" by Horst D. Schulz and A.A. Bilia
- "The Modern Herbal Dispensatory: A Medicine-Making Guide" by Thomas Easley and Steven Horne

ADVANCES IN DRUG DELIVERY SYSTEM

Course Code: VACSPS015

Course Objectives:

This course is designed to explore the latest advancements in drug delivery systems, covering innovative technologies and strategies that enhance the targeted and controlled release of pharmaceuticals. Through a combination of theoretical concepts, case studies, and practical applications, students will gain insights into cutting-edge drug delivery systems and their impact on healthcare.

Course Outcome:

- Propose strategies for incorporating CRISPR and gene editing technologies in drug delivery.
- Analyse the factors influencing drug release kinetics in controlled drug delivery systems.
- Design a smart drug delivery system using stimuli-responsive materials
- Evaluate the ethical considerations associated with gene and RNA therapeutics
- Develop a conceptual framework for an implantable drug delivery device.

Course Content:

Module I:

Introduction to Drug Delivery Systems-Overview of Drug Delivery, Drug Administration Routes, Advantage and Disadvantages of different delivery systems.

Module II:

Nanotechnology in Drug Delivery-Nanoparticle Drug Delivery Systems, Types of nanoparticles and their applications, Nanocarriers for Targeted Delivery.

Module III:

Controlled Drug Release Systems-Introduction to Controlled Release, Advanced Formulations for Controlled Release, Case studies on controlled release formulations.

Module IV:

Smart Drug Delivery Systems-Responsive Drug Delivery Systems, Implantable and Wearable Devices, Wearable technologies in drug delivery, Smart polymers and their applications.

Module V:

Gene and RNA Therapeutics-Nucleic Acid-Based Drug Delivery, Overview of gene and RNA therapeutics, Delivery challenges and solutions, CRISPR and Gene Editing Technologies, Application of CRISPR in drug delivery, Ethical considerations and future perspectives.

Module VI:

Regulatory Aspects and Future Trends-Regulatory Challenges in Advanced Drug Delivery, Overview of regulatory considerations, Case studies on successful regulatory approvals, Future Trends and Emerging Technologies, Overview of emerging trends in drug delivery.

References:

- Fundamentals and Applications by Anya M. Hillery, Kinam Park, and James Swarbrick.
- Nanomedicine Principles and Perspectives by Rodolfo Maria Sasia.
- Scientific articles from journals such as Journal of Controlled Release and Advanced Drug Delivery Reviews.