

SGRR UNIVERSITY

**Brochure of Value-Added Courses
School of Pharmaceutical Sciences
2023-2024**

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.

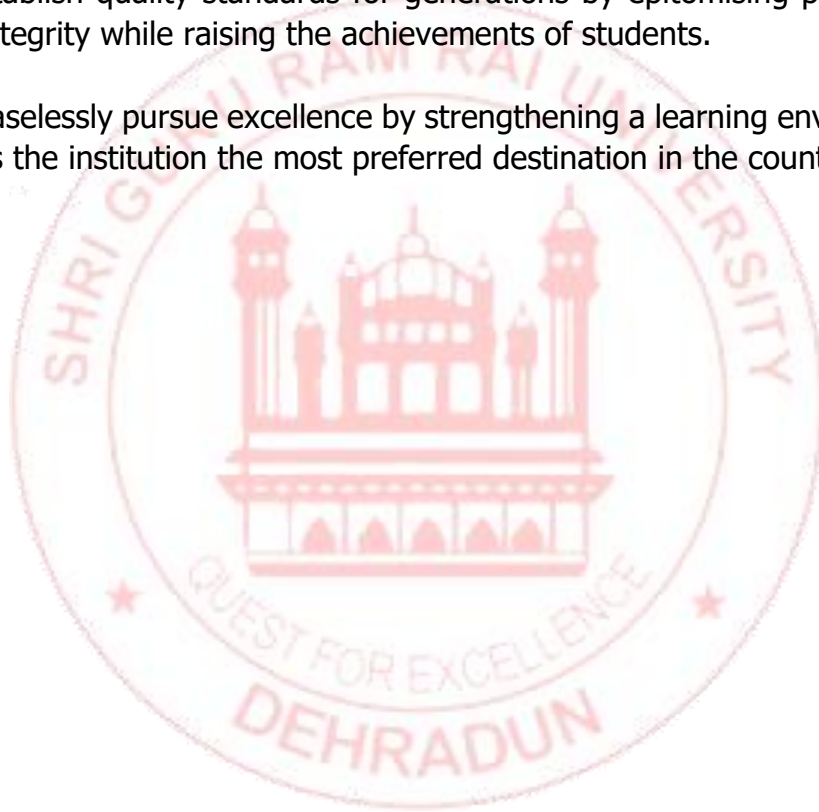
Vision

“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.



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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 an 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.



Industrial Biotechnology

Course Code: VACSPS016

Course Objectives-

The course is designed to provide students with a comprehensive understanding of the fundamental principles, applications, and technologies involved in leveraging biological systems for industrial processes. Students will delve into the basics of biology, microbiology, biochemistry, and molecular biology, establishing a strong foundation for the subsequent exploration of bioprocess engineering. This includes the design and optimization of bioreactors, fermentation processes, and downstream processing. The curriculum covers microbial biotechnology, emphasizing the role of microorganisms like bacteria, yeast, and fungi in industrial applications, while also addressing enzyme technology and its applications. Genetic engineering and synthetic biology principles are introduced, focusing on gene manipulation and strain improvement. The course further explores the bioproduction of chemicals, pharmaceuticals, and bio fuels, with attention to environmental biotechnology for waste treatment. Quality control, regulatory compliance, and economic considerations in bioprocessing are integral components, complemented by case studies showcasing real-world applications. Ethical and social implications are discussed, and students develop research and innovation skills to contribute to the dynamic field of industrial biotechnology. Overall, the course aims to equip students with the knowledge and skills necessary for meaningful contributions to the sustainable production of valuable products in diverse industries.

- Know proficiently about biological process and and bioprocess engineering.
- Discuss the enzyme technology and genetic engineering techniques
- Explain the bioprocess analysis and metabolic engineering
- Discuss bio energy and bio materials used in biotechnology
- Discuss about role of biotechnology in pharmaceutical industries.

Course Outcomes:

- Proficiency in Biological Processes and Bioprocess Engineering
- Understanding of Enzyme Technology and Genetic Engineering Techniques
- Competence in Bioprocess Analysis and Metabolic Engineering
- Knowledge of Bioenergy and Biomaterials in Biotechnology
- Understanding the Role of Biotechnology in Pharmaceutical Industries

Course content : -

Module I: - Enzyme, Enzyme theories and engineering- Definition, functions of enzymes, Enzyme theories, Enzyme Discovery and Engineering

Module II:-Method in systems and synthetic biology- DNA synthesis, genome editing techniques, Metabolic engineering methods, data visualization and bioinformatics tools.

Module III :- Biochemical and Bioprocess engineering- Enzyme immobilization techniques, Fed- batch fermentation techniques, Bioreactor design and scale up, metabolic engineering and biofuel production

Module IV :- Pharmaceuticals and fine chemicals- Bio former catalysts, industrial monomers, and their use in pharmaceutical personal care products.

Module V:-Bio energy and bio materials- Introduction, new strategies in bio fuel production, enzymatic bio fuel cells, biomaterials and bio manufacturing.

References:

- "Industrial Biotechnology: Sustainable Growth and Economic Success" by Christoph Wittmann and James C. Liao.
- "Bioprocess Engineering Principles" by Pauline M. Doran
- "Metabolic Engineering: Principles and Methodologies" by Jens Nielsen and John Nielsen:
- "Industrial Microbiology: An Introduction" by Michael J. Waites, Neil L. Morgan, and John S. Rockey
- "Bioseparations Science and Engineering" by Roger G. Harrison, Paul W. Todd, Scott R. Rudge, and Demetri P. Petrides

Essentials of global Health

Course Code: VACSPS017

Course Objectives-

The course on "Essentials of Global Health" aims to provide students with a comprehensive understanding of the fundamental principles and key issues in the field of global health. The objectives include establishing a solid foundation in the determinants of health, exploring the social, economic, and environmental factors that contribute to global health disparities. Students will examine the impact of infectious diseases, non-communicable diseases, and emerging health threats on a global scale. The course seeks to foster an awareness of cultural competence and ethical considerations in addressing health challenges worldwide. Furthermore, students will gain insights into the role of international organizations, policies, and interventions in promoting global health equity. Through case studies and discussions, the course aims to develop critical thinking skills, encouraging students to analyze complex health issues and propose evidence-based solutions. Ultimately, the course seeks to empower students with the knowledge and perspectives necessary to contribute meaningfully to the field of global health and address health disparities on a global scale.

- Understand the determinants of health.
- Discuss the Impact of Infectious and Non-Communicable Diseases.
- Explain the Cultural Competence and Ethical Awareness
- Discuss the International Organizations and Policies
- Develop the Critical Thinking Skills.

Course Outcome:

- Comprehension of Health Determinants (Objective: Understand the determinants of health):
- Analyzing the Impact of Diseases (Objective: Discuss the Impact of Infectious and Non-Communicable Diseases):
- Cultural Competence and Ethical Awareness (Objective: Explain the Cultural Competence and Ethical Awareness):
- Understanding of International Health Policies (Objective: Discuss the International Organizations and Policies):
- Enhanced Critical Thinking Skills (Objective: Develop the Critical Thinking Skills):

Course content: -

Module I - Introduction- Definition, world health, Burden of disease, Demography and health.

Module II -Health systems and value for money in health- Aim of health systems and organization, Ethics in health systems and Health expenditure

Module III - Cost cutting theme in global health- Child immunization, Child health, Women health, adolescent health.

Module IV- Critical cause of illness and death I- Anti microbial resistance, Infectious diseases- TB, malaria, HIV, COVID.

Module V - Critical cause of illness and death II- Alcohol and tobacco addiction, mental health

References:

- Global Health: An Introduction to Current and Future Trends" by Kevin McCracken and David R. R. Phillips.
- "Essentials of Global Community Health" by Jaime Gofin.
- "Global Health 101 Case Studies" by Richard Skolnik.
- "Global Health: Diseases, Programs, Systems, and Policies" by Michael H. Merson, Robert E. Black, and Anne J. Mills.
- "Global Health: An Introduction to Current and Future Trends" by Kevin McCracken and David R. R. Phillips:
- "Introduction to Global Health" by Kathryn H. Jacobsen.
- "Global Health and immunization" by Richard Skolnik
- "Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases" by John E. Bennett, Raphael Dolin, and Martin J. Blaser.

Epidemics- the dynamics of infectious diseases

Course Code: VACSPS018

Course Objectives :

This course is designed to achieve specific objectives aimed at providing students with a comprehensive understanding of the dynamics and complexities surrounding infectious disease outbreaks. Firstly, the course aims to establish a solid foundation in the principles of epidemiology; ensuring students comprehend the fundamental concepts of disease transmission, outbreak investigation, and surveillance. Students will delve into the dynamics of infectious diseases, exploring the factors influencing the spread of pathogens within populations, such as host-pathogen interactions, environmental considerations, and the impact of human behavior. The course also seeks to familiarize students with mathematical models used in epidemiology to analyze and predict the progression of infectious diseases. By examining historical and contemporary case studies, students will gain insights into the real-world application of epidemiological principles and the varied strategies employed to control and mitigate the impact of epidemics. Additionally, the course will address the role of public health interventions, risk communication, and global cooperation in managing infectious disease crises. Through interactive discussions and practical exercises, students will develop critical thinking skills necessary for analyzing epidemic scenarios and proposing evidence-based strategies for disease prevention and control. Overall, the course objectives aim to equip students with the knowledge and skills essential for comprehending, responding to, and mitigating the impact of infectious disease epidemics in various global contexts.

- Fundamental Understanding of Epidemiological Principles.
- Comprehension of Disease Dynamics.
- Exploration of Public Health Interventions.
- Risk Communication and Global Cooperation
- Preparedness and Mitigation Strategies
- Course outcomes:

Course outcomes:

- Foundational Knowledge of Epidemiological Principles (Objective: Fundamental Understanding of Epidemiological Principles)
- Comprehensive Understanding of Disease Dynamics (Objective: Comprehension of Disease Dynamics)
- Exploration of Public Health Interventions (Objective: Exploration of Public Health Interventions)

- Effective Risk Communication (Objective: Risk Communication and Global Cooperation)
- Preparedness and Mitigation Strategies (Objective: Preparedness and Mitigation Strategies)

Course content:

Module I - Introduction- Pathogens, parasites, infection and diseases, transmission types.

Module II -Basics of cycle- Host extensions, force of infection, cycle, pathogen micro biome interaction

Module III: Epidemiology- Social networks, Structure of networks, Spatial Heterogeneity, Surveillance and disclosure.

Module IV - Vaccination- Discovery of first vaccine, herd immunity, Vaccine refusal, Vaccination Ethics.

Module V - Global Health- SARS, Disease surveillance, emerging disease issues, crop and food security.

References -

- "The Great Influenza: The Story of the Deadliest Pandemic in History" by John M. Barry.
- "Spillover: Animal Infections and the Next Human Pandemic" by David Quammen.
- "The Rules of Contagion: Why Things Spread - and Why They Stop" by Adam Kucharski.
- "Modeling Infectious Diseases in Humans and Animals" by Matt J. Keeling and Pejman Rohani
- "The Hot Zone: The Terrifying True Story of the Origins of the Ebola Virus" by Richard Preston.
- "Food Security and Global Environmental Change" by John Ingram, Polly Ericksen, and Diana Liverman.
- "Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases" by John E. Bennett, Raphael Dolin, and Martin J. Blaser.

Healthcare laws

Course Code: VACSPS019

Course Objectives:

This course "Healthcare Law" is designed to provide students with a comprehensive understanding of the legal principles and regulations that govern the healthcare industry. The primary objectives of the course are to familiarize students with the legal framework surrounding healthcare delivery, including laws related to patient rights, healthcare providers' responsibilities, and the complex relationship between healthcare professionals and institutions. Students will explore the legal and ethical considerations in healthcare decision-making, including issues of consent, confidentiality, and end-of-life care. Additionally, the course aims to delve into healthcare policies, compliance, and regulatory frameworks, fostering an awareness of the evolving landscape of healthcare law. Through case studies and practical applications, students will develop the analytical skills needed to navigate legal challenges in healthcare settings and propose solutions that align with ethical standards and legal requirements. Overall, the course objectives seek to empower students with the knowledge and skills necessary to comprehend, interpret, and apply healthcare laws in various professional contexts within the healthcare industry.

- Know about legal framework governing the healthcare industry.
- Critically analyze and evaluate complex legal issues in healthcare
- Know about legal concepts and analyses related to healthcare laws both in writing and orally,.
- Demonstrate an understanding of the ethical considerations inherent in healthcare laws
- Demonstrate proficiency in researching, accessing, and synthesizing relevant legal information

Course outcomes:

- Understanding Legal Framework in Healthcare (Objective: Know about the legal framework governing the healthcare industry):
- Critical Analysis of Legal Issues in Healthcare (Objective: Critically analyze and evaluate complex legal issues in healthcare):
- Articulation of Healthcare Law Concepts (Objective: Know about legal concepts and analyses related to healthcare laws both in writing and orally):
- Ethical Considerations in Healthcare Law (Objective: Demonstrate an understanding of the ethical considerations inherent in healthcare laws):
- Research and Synthesis of Legal Information (Objective: Demonstrate proficiency in researching, accessing, and synthesizing relevant legal information):

Course content :

Module I -Fundamentals of international health care laws- Introduction, History, Scope, Limits of laws, Medical malpractices used, fine and penalties.

Module II : Privacy Law - Introduction, history, privacy rights and regulations, privacy rules for violation.

Module III- HIPAA - HIPAA rules and regulations, fines and penalties, HIPAA in telemedicine and recent advances.

Module IV- Intellectual property in Healthcare system- Introduction, Types and ethical considerations.

Module V - Comparative health systems- WHO guidelines for improving healthcare outcomes.

References –

- "Health Law: Cases, Materials and Problems" by Barry R. Furrow, Thomas L. Greaney, Sandra H. Johnson, Timothy S. Jost, Robert L. Schwartz
- "Health Care Law and Ethics" by Mark A. Hall, David Orentlicher, Mary Anne Bobinski.
- "Understanding Health Law" by James A. Morone, Lawrence O. Gostin
- "Healthcare Law and Policy: Readings, Notes, and Questions" by Barry R. Furrow, Thomas L. Greaney, Sandra H. Johnson, Timothy S. Jost.
- "Law, Liability, and Ethics for Medical Office Professionals" by Myrtle R. Flight, Patricia Schnering.
- "Public Health Law and Ethics: A Reader" by Lawrence O. Gostin, Lindsay F. Wiley

Bio-Medical Waste Management

Course Code: VACSPS020

Course Objectives:

This course aims to equip students with a comprehensive understanding of the principles, regulations, and best practices surrounding the safe and responsible handling of biomedical waste in healthcare settings. Throughout the course, students will develop a solid foundation in the classification and characteristics of biomedical waste, recognizing the potential health hazards and environmental impact associated with improper management. An emphasis will be placed on navigating the complex regulatory landscape at both national and international levels, enabling students to comprehend the legal obligations and responsibilities of healthcare facilities. Practical skills will be honed through units focusing on the proper segregation, packaging, and storage of biomedical waste, ensuring students are adept at implementing effective waste management plans. Furthermore, the course will delve into various treatment technologies, including heat-based methods, chemical treatment, and emerging waste-to-energy technologies. By exploring case studies and best practices, students will gain insights into successful waste reduction strategies and sustainable approaches. The overarching objective is to prepare students to contribute meaningfully to the healthcare sector by fostering a commitment to ethical, compliant, and environmentally responsible biomedical waste management practices.

- Demonstrate a comprehensive understanding of medical waste
- Critically analyze international and national regulations governing medical waste management
- Effectively communicate legal and regulatory requirements related to medical waste management
- Recognizes and apply ethical considerations in medical waste management,
- Analyze global perspectives on medical waste management

Course outcomes:

- Comprehensive Understanding of Medical Waste (Objective: Demonstrate a comprehensive understanding of medical waste):
- Critical Analysis of Medical Waste Regulations (Objective: Critically analyze international and national regulations governing medical waste management):
- Effective Communication of Legal and Regulatory Requirements (Objective: Effectively communicate legal and regulatory requirements related to medical waste management):

- Application of Ethical Considerations (Objective: Recognizes and apply ethical considerations in medical waste management):
- Analysis of Global Medical Waste Management Perspectives (Objective: Analyze global perspectives on medical waste management):

Course content:

Module I: - Overview of Biomedical Waste- Definition and classification of biomedical waste, Health risks associated with improper biomedical waste management, Environmental consequences and public health implications

Module II :- Regulatory Framework and Compliance- Overview of international standards , National regulations and guidelines, Legal obligations and responsibilities of healthcare facilities, Compliance Strategies.

Module III: Biomedical Waste Handling and Collection- Segregation, Packaging, and Storage Methods of waste segregation, Proper packaging techniques, Safe storage practices in healthcare facilities.

Module IV : Treatment Technologies- Autoclaving, microwaving and other heat-based methods Chemical treatment and disinfection, Waste-to-energy technologies

Module V - Best Practices and Emerging Trends- Innovative solutions and best practices in waste reduction, sustainable and environmentally friendly approaches.

References -

- "Biomedical Waste Management: From Principles to Practice" by Jai P. Narain
- "Biomedical Waste Management: Processing, Treatment, and Disposal" by Amal K. Mitra.
- "Biomedical Waste Management: Global Issues and Practices" by Nripendra Nath Bandyopadhyay
- "Biomedical Waste Management: A Study for Tirunelveli City" by P. Raja
- "Biomedical Waste Management and Environmental Health" by Oveta Fuller
- "Hazardous and Radioactive Waste Treatment Technologies Handbook" by Chang H. Oh