SHRI GURU RAM RAI UNIVERSITY
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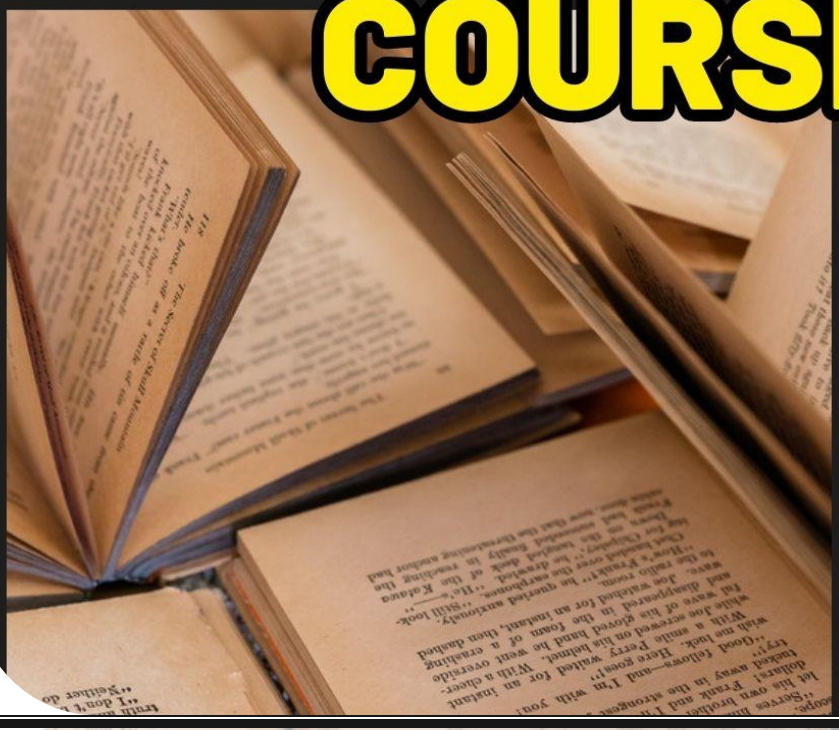
VALUE ADDED COURSES



SGRRU

SGRR UNIVERSITY

Brochure of Value-Added School of Basic & Applied Sciences Courses 2019-2020

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 5500+ 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 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.

Index

INTRODUCTION

Traditional education provides a strong foundation, but to stay competitive and relevant, individuals must continually enhance their skill set. Enter value-added courses, a gateway to a world of specialized expertise designed to complement and enrich existing knowledge.

Value-added courses go beyond the conventional academic curriculum, offering practical insights and hands-on experience in niche areas. These courses are meticulously crafted to bridge the gap between theoretical learning and real-world application, empowering individuals to navigate the complexities of contemporary professional landscapes.

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.

Microbial Techniques

Course Code: VAC2019-16

Course Objectives:

This course introduces students to fundamental techniques used in microbiology. It covers principles and applications of various methods for studying microorganisms, including isolation, cultivation, identification, and manipulation of microbes.

- Students will recognize Laboratory Skills.
- Student will acquire new skills and abilities, and the identification of Microorganism.

Course Outcomes:

- Demonstrate the fundamental Microbiology Knowledge.
- Understanding the master Laboratory Skills.
- Applying the Quality Control Measures.
- Analyzing the Microbial Diversity.

Course Content :

Module I: Introduction to Microbiology.

Module II: Overview of Microbial WorldHistorical perspective and key discoveries Basic characteristics of microorganisms

Module III: Microbial Cell Structure and Function Prokaryotic and eukaryotic cell structure

Cell growth and reproduction Metabolism and energy production in microbes

Module IV: Microbial Cultivation Techniques Principles of microbial growth Culture media and its types Sterilization methods Aseptic techniques in handling microbial cultures

Module V: Microbial Identification Techniques Morphological and biochemical methods. Molecular techniques (PCR, DNA sequencing) Serological methods, Microbial Staining Techniques Microbial Enumeration and Viability, Colony counting methods, Serial dilution and plating Technique.

References:

Prescott's Microbiology by Joanne Willey, Linda Sherwood, and Christopher J. Woolverton

Laboratory Manual in Microbiology by James Cappuccino and Natalie Sherman

Fundamentals of Green Chemistry

Course Code: VAC2019-17

Course Objectives:

- To understand the core principles of green chemistry and their importance in sustainable development.
- To learn about the design and implementation of green chemical processes.
- To explore the environmental impact and regulatory aspects of chemical processes.
- To encourage innovative thinking for sustainable solutions in chemistry.

Course Outcomes:

- Comprehensive understanding of the principles and practices of green chemistry.
- Ability to apply green chemistry techniques in the design and development of chemical processes.
- Awareness of the environmental and health impacts of chemical processes and products.
- Skills to critically evaluate and innovate sustainable solutions in the field of chemistry.

Course Content :

Module I : Introduction to Green Chemistry (Duration: Varied)

Definition and Principles of Green Chemistry, Historical Development, Importance in Sustainability.

Module II : Green Chemistry Techniques and Tools (Duration: Varied)

Alternative Feedstocks, Green Solvents, Energy Efficiency, Catalysis.

Module III : Designing Safer Chemicals and Processes (Duration: Varied)

Toxicology, Risk Assessment, Lifecycle Analysis, Designing for Degradation.

Module IV : Industrial Applications of Green Chemistry (Duration: Varied)

Case Studies in Pharmaceutical, Agricultural, and Material Industries, Scale-up Challenges.

Module V : Future Directions and Innovation in Green Chemistry (Duration: Varied)

Emerging Technologies, Policy and Regulatory Framework, Green Chemistry in Education and Research.

References:

- "Green Chemistry: Theory and Practice" by Paul T. Anastas and John C. Warner.
- "Sustainable Chemistry: An Introduction" by G. A. Olah, A. Goeppert, and G. K. Surya Prakash
- "Handbook of Green Chemistry" edited by Paul T. Anastas.
- "Green Chemistry and Engineering: A Pathway to Sustainability" by Anne E. Marteel-Parrish and Martin A. Abraham.
- "Introduction to Green Chemistry" by Albert Matlack.

Environmental Pollution and Waste Management

Course Code: VAC2019-18

Course Objectives:

- Students to be made aware about significance of environment in our daily life.
- Student are given a perceptive about pollution and its impact.
- Student are to be made aware about the approach of reducing the pollution.

Course Outcomes:

- Know about environment and its pollution.
- Understand the various Tools to control pollution.
- Significance of RRR .
- Student can formulate a research project to reduce environmental pollution.

Module I: ENVIRONMENTAL AWARENESS

Definition, Scope & Importance, Need For Public Awareness- Environment definition, Eco system - Balanced ecosystem, Human activities - Food, Shelter, Economic and social Security. Effects or human activities on environment· Agriculture, Housing, Industry, Mining and Transportation activities,

Module II: ENVIRONMENTAL POLLUTION

Environmental Pollution (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts, Case-studies): Surface and Ground Water Pollution; Noise pollution; Soil Pollution and Air Pollution. Basics of Environmental Impact Assessment. Sustainable Development.

Module III: Collection, storage, transport and disposal of wastes

Waste Collection, Storage and Transport: Collection components, storage-containers/collection vehicles, collection operation, transfer station, waste collection system design, record keeping, control, inventory and monitoring, implementing collection and transfer system, a case study. Waste Disposal: key issues in waste disposal, disposal options and selection criteria, sanitary landfill, landfill gas emission, leachate formation, environmental effects of landfill, landfill operation issues, a case study.

Module IV: Waste processing techniques & source reduction, product recovery & recycling

Purpose of processing, mechanical volume and size reduction, component separation, drying and dewatering. Source Reduction, Product Recovery and Recycling: basics, purpose, implementation monitoring and evaluation of source reduction, significance of recycling,

planning of a recycling rogramme, recycling programme elements, commonly recycled materials and processes, a case study.

References:

- Environmental studies, Benny Joseph, Tata Mcgraw-Hill 2nd edition 2012.
- M.Ayi Reddy Textbook of environmental science and Technology, BS publications 2007.
- Dr. B.S Chauhan, Environmental studies, university of science press 1st edition

Role of Geology in Day-to-Day Mining Operations

Course Code: VAC2019-19

Course Objective:-

- To understand the geological applications for mining exploration area.
- The geologist is responsible for determining the location and grade of the ore and ensuring that the ore is mined to maximize the profitable extraction of the ore deposit.

Course Outcomes:

- To gain knowledge about the applications for mining exploration of an area.
- Understand the concept and importance of mining.
- Understand the use of geology in mining industry.

Course Content :

Module I :-Introduction of Geology, role of geology in mining industry, Determine and locate deposits of important minerals.

Module II :-Mapping, recording and compiling geological data in and around the mine, exploring, dating and sampling mineral deposits, interpreting and mapping the geology of a mine, preparing and presenting data.

Module III :- Using geo-scientific techniques to predict the grade and structure of ore bodies in unknown areas, classifying resources and estimating the mine reserve, Rocks and gems extraction, Safety of the extraction process.

References :

- D. J. Deshmukh, Elements of mining technology, Vol. 3, Vidyasewa, 3 rd ed.1989.
- N.T. Karlein, Mine transport, Orient Longman, 1 st ed. 1967.