



Central University of Himachal Pradesh

(ESTABLISHED UNDER CENTRAL UNIVERSITIES ACT 2009)

Dharamshala, Himachal Pradesh-176215



NAAC Criterion-I

Key Indicator – 1.3.2

**List of value added courses which are optional
an offered outside the curriculum of the
program**

1.3.2 Evidences



Department of Computational Biology and Bioinformatics

Central University of Himachal Pradesh, Dharamshala,

Kangra



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Department of Computational Biology and
Bioinformatics

| S. No. | DESCRIPTION | Page No. |
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| 1 | Names and Syllabi of Values added courses | 1-5 |
| 2 | List of Students of different department taken the courses offered by Department of Computational Biology and Bioinformatics | 6-15 |

Syllabus of Subjects

Course Title: Public Health and Issues

Course Code: BIN 432

Total Lectures: 20

| L | T | P | Cr |
|---|---|---|----|
| 2 | 0 | 0 | 2 |

Unit-I Basic Concepts of Public Health

- History of Public Health and Its Milestones
- Natural History of Diseases
- Globalisation and Its Impact on Health

Unit-II Common Health Problems in India

- Principles of Diseases Epidemiology
- Level of prevention of diseases

Unit-III Epidemiology of diseases

- Communicable Diseases- Tuberculosis, AIDS, Ebola, Cholera, Leprosy etc.
- Non-Communicable Diseases- Cardio-vascular diseases, Diabetes, Cancers, Rheumatic heart disease, Blindness, Mental Health, Occupational Diseases, Genetic diseases

Unit-IV Health Policies and Services in India

- Comprehensive Health Care
- All National Health Programs
- Policies and schemes for the prevention of the disease

Course Title: Skills in Agriculture Technology

Course Code: BIN 434

Total Lectures: 20

| L | T | P | Cr |
|---|---|---|----|
| 2 | 0 | 0 | 2 |

Course Content

Unit 1: Agricultural production and management (4 Hours)

- Brief crop production practices.
- Cereals (rice, wheat, maize), Pulses (chick-pea, pigeon-pea, lentils, urd, moong, soyabean), Oilseed (mustard, groundnut, sunflower), Fodder & fibre crops- berseem, cotton, jute, mesta), Commercial crop (sugarcane, tea, coffee)

Unit 2: Production and management of horticultural crops (8 Hours)

- Fruits (mango, banana, guava, citrus, grapes, pomegranate, apple, cashew, coconut and areca nut), Vegetable (potato, cauliflower, cabbage, tomato, brinjal, chilli, bhindi, cucurbits, pea), Flower (Rose, tube rose, marigold), Spices (turmeric, coriander, cumin, black pepper).
- Common Pests, disease and management practices, Pesticides, Post-Harvest handling of important agricultural produce

Unit 3: Seed production and nursery management (8 Hours)

- Common principles of pollination and fertilization in crops. Self and cross pollinated crops, Definition of pure lines, inbred, hybrids, composites and synthetics.
- Nursery bed preparation, treatment of nursery soil, seed treatment, seed sowing, care of seedlings in nursery, common nursery structures.

Unit 4: Entrepreneurial skill development (10 Hours)

- Apiculture, Lac culture, sericulture, Pisciculture, Mushroom culture.
- Biogas, fertilizers and sanitation, Processing of horticulture produce, terrarium preparation, Ornamental fish culture

Transactional Modes: Lecture; Tutorial; Problem solving; Self-learning.

Suggested Readings

1. The Digital Revolution. How Connected Digital Innovations Are Transforming Your Industry, Company & Career, Author Inder Sidhu, 2015.
2. Farmers Handbook on Basic Agriculture by Dr. P. Chandra Shekara, Second edition August 2016.
3. **Precision Agriculture Technology for Crop Farming by Qin Zhang, CRC Press, 2015.**

Course Title: History of Science and Technology in India

Course Code: BIN 436

Total Lectures: 20

| L | T | P | Cr |
|---|---|---|----|
| 2 | 0 | 0 | 2 |

Course Objectives: This course is designed to introduce students about the rich scientific culture of India. The course attempts to develop a quest for search and research of scientific concepts embedded in the traditional Indian texts and rituals. For that, each topic covered in the course is taught by integrating two aspects: its modern scientific understanding and its discussion in the Indian literature. Prominent Indian Scientists, the Acharyas and the Rishis associated with a topic under discussion are duly introduced and acknowledged.

Course Contents

Unit 1: Introductory concepts

- Antiquity of Indian civilization
- The archaeological sources
- The literature sources: Vedas and Vedangas, Epics and Puranas, Sastras (Niti, Artha), etc.
- Needham's puzzle

Unit 2: Mathematics

- The Sulbasutras
- Concept of pi
- Zero, decimal number system, place value system, combinatorics
- Katapyadi system, binary number system
- Fibonacci series and golden ratio

Unit 3: Physics and Astronomy

- The Vaisheshika: Matter and Universe (Notions of Padarth, Dravya and Guna)
- Measurements of length and mass
- Kaal ganana, calendars and eclipses: Five siddhants
- Laws of motion, concept of gravity and relativity
- Sound, light and energy

Unit 4: Life Sciences and Medicine

- Plants and agriculture, the Vrikshayurveda
- Microbes, animals and humans
- Origin and evolution of Ayurveda
 - Basic concepts; food, drinks and materia-medica; diseases; medicine; surgery; holistic view of life
- Brief discussions on Rasachikitsa, Nadi vijnana, Yoga, Siddha, Homeopathy, Sowa-Rigpa

UNIT 5: Engineering Sciences and Technology

- Architecture and Vastu Shastra
- Alchemy and metallurgy
- Marine science

Text Books:

- **Suresh Soni (2008).** India's Glorious Scientific Tradition. Ocean Books
- **Bose et al. (2009).** A Concise History of Science in India. Universities Press

Additional Readings:

- **BB Datta and AN Singh (1962).** History of Hindu Mathematics. Asia Publishing House
- **NG Dongre and SG Nene (2016).** Physics in Ancient India. National book Trust.
- **MS Valiathan.** The Legacy of Caraka/ Susruta/ Vagabhata. Universities Press.
- **P.C. Ray (1903).** A History of Hindu Chemistry. The Bengal chemical and pharmaceutical works ltd.



Central University of Himachal Pradesh

(Established under Central Universities Act 2009)

Temporary Academic Block, Shahpur, Distt. Kangra (HP) - 176206

Website: www.cuhimachal.ac.in

Course Title: Biosafety Issues

Course Code: BIN. 434

Credits earned: 2

Learning Outcomes: The course is designed to introduce students to biosafety guidelines of DBT, Ministry of Science & Technology, Government of India and the World Health Organization. The semester for offering Foundation courses can be altered as per departmental requirements.

Course Contents:

UNIT-I: Introduction

- Introduction to the biosafety guidelines
- Constitution of institutional biosafety committees (IBSCs) and its functions
- Microbiological risk assessment

UNIT-II: Biohazards and biosafety levels

- Biosafety level 1
- Biosafety level 2
- Biosafety level 3
- Biosafety level 4

UNIT-III: Laboratory biosecurity, equipment and good lab practices

- Laboratory biosecurity concepts
- Biological safety cabinets and equipment
- Laboratory techniques
- Disinfection and sterilization
- Introduction to the transport of infectious substances

UNIT-IV: Scientific Considerations

- Biosafety and recombinant DNA technology
- Chemicals, fire, electrical, noise and ionizing radiation hazards
- Human health and environmental considerations
- Containment facilities

UNIT-V: National; International frameworks on biosafety

- Guidelines by Ministry of Environment and Forests (MoEF), & DBT Government of India
- International binding and non-binding instruments on Biosafety
- Potential overlaps and conflicts between treaties and trade concerns
- Competent authorities to regulate the biosafety issues
- Safety checklist

Transactional Modes: Lecture; Tutorial; Problem solving; Self-learning.

Suggested Readings:

1.3.2

| Criteria Index Number | Criteria Details |
|-----------------------|--|
| 1.3.2 | Number of value-added courses for imparting transferable and life skills offered/added during last five years. |

DVV: Kindly provide 1) List of value added courses which are optional and offered outside the curriculum of the programs as endorsed by the appropriate authority. 2) Brochure and Course content or syllabus along with course

Clarification /Justification and evidence

1) List of value added courses which are optional and offered outside the curriculum of the programs as endorsed by the appropriate authority.

The following is the year-wise list of value added courses that were offered outside the curriculum of program:

| S.No. | Year | Course Code | Course Name | Credits |
|-------|---------|-------------|--|---------|
| 1 | 2016-17 | CBB432 | Public Health and Infections | 2 |
| 2 | 2017-18 | CBB434 | Skills in Agriculture Technology | 2 |
| 3 | 2018-19 | CBB436 | History Of science & Technology In India | 2 |
| 4 | 2019-20 | CBB436 | History Of science & Technology In India | 2 |
| 5 | 2020-21 | CBB409 | Biosafety Issues | 2 |
| 6 | 2020-21 | CBB459 | History Of science & Technology In India | 2 |

The above facts are true to the best of departmental records and knowledge.

Prof. Mahesh Kulharia
Head of the Department
Computational Biology and Bioinformatics

निदेशक / Director

अपिचलनायक जीव विज्ञान एवं वैद्युतबिज्ञान केंद्र
Centre for Computational Biology and Bioinformatics

हिमाचल प्रदेश केंद्रीय विश्वविद्यालय, धरमशाला /
Central University of Himachal Pradesh,
Dharamshala-176215