Curriculum framework,
Ordinance,
Scheme of Examination and
Syllabus for
Four Years Bachelor in
Public Health Sciences (BPHS)

University Institute of Public Health Sciences,
Maharshi Dayanand University,
Rohtak, Haryana

Background

India, with a population exceeding 1.35 billion, is witnessing rapid economic and societal transformations. While the nation strides towards becoming one of the world's largest economies, it grapples with challenges in global Human Development Index rankings, primarily stemming from inadequate health and education services at the grassroots level. Noteworthy strides have been made in medical education and clinical services, both in the private and public spheres, achieving global benchmarks in various domains. Nonetheless, the public health sector still lacks sufficient institutions dedicated to advancing Public Health Education and Research, hindering the development and implementation of transformative health policies and practices. The dearth of expertise in public health adversely impacts policy formulation, program design, implementation, evaluation, and innovative problem-solving initiatives.

Furthermore, India is undergoing a swift health evolution, contending with unresolved issues such as communicable diseases, malnutrition, risky pregnancies and births, alongside the burgeoning epidemic of non-communicable diseases, collectively posing a significant threat to the nation's health and progress. Consequently, there's a pressing need for a unified Public Health initiative to establish healthcare systems meeting global standards and attaining Sustainable Development Goals (SDGs). This entails ensuring efficient delivery of cost-effective interventions for health promotion, disease prevention, and accessible diagnostic and therapeutic healthcare. Achieving this goal necessitates cultivating a proficient and inventive workforce exclusively dedicated to serving as public health specialists.

Scope and rationale

In recent times, there has been a growing demand for Public Health professionals not only in India but also across the globe. The Government of India's initiative establishing more than 170,000 Health and Wellness Centres as part of the Ayushman Bharat Scheme (2018) is expected to create a substantial demand for such professionals. Additionally, under the National Health Mission (NHM), Indian states are being encouraged to develop separate Public Health Cadres, leading to increased opportunities. Many state governments are already in the process of establishing these cadres. Consequently, there will be abundant opportunities for health professionals specializing in Public Health in the coming years, as evidenced by the job trends depicted in the figure below. Moreover, numerous UN and NGO institutions have begun hiring Public Health professionals, underscoring the urgent need to prepare a trained workforce in this field.

The university

Established in 1976, Maharshi Dayanand University, Rohtak, was conceived as a residential university aimed at fostering interdisciplinary higher education and research, particularly in environmental, ecological, and life sciences. Since its inception, the university has made significant strides and is now on its way to becoming a leading educational institution in the country. Evolving into a teaching-cum-affiliating university, it boasts a commendable track record in academics, research, literary and cultural endeavours, and sports. Presently, the university comprises 42 Post-Graduate Departments and 12 Faculties. Notable attributes include outstanding standards of teaching and research, a well-qualified faculty, efficient administrative processes, a vibrant academic atmosphere, robust campus life, strong national and international ties, punctual conduct of examinations and timely result declarations, ample opportunities for holistic student development, a focus on serving rural, female, and marginalized communities, and an e-governance-driven administrative framework. This progress was recognized when the university attained an 'A+' grade from NAAC in March 2019. Spread across a spacious campus, the university offers excellent infrastructure and essential student support services. It's beautiful landscaping adds to its allure. Accommodation is provided for 2500 male and an equal number of female students, and the campus boasts top-notch computer and network facilities. Moreover, strategic partnerships with national and international academic and research organizations have been established for collaborative academic and research initiatives. With its overarching commitment to excellence and a global perspective, coupled with a deep dedication to social and community causes, Maharshi Dayanand University is poised to emerge as a trailblazing institution in the years to come.

University Institute of Public Health Sciences

In alignment with the esteemed traditions and values of the University, the University Institute of Public Health Sciences has been established with the mission to provide top-tier education aimed at cultivating skilled professionals to meet both current and future demands of our nation. The programs offered by the institute are meticulously designed to cater to the needs of society while adhering to the guidelines set forth in the National Education Policy (NEP-2020). With a commitment to excellence, the institute ensures the delivery of high-quality course content facilitated by seasoned faculty members and industry experts, with a strong emphasis on practical training and hands-on experience. Serving as a hub for collaboration, the institute seeks to engage with institutions nationwide to foster mutual growth and advancement. Public health programs are poised to play a pivotal role in addressing the healthcare challenges of our nation, and the

institute is dedicated to nurturing competent professionals in this field. Furthermore, in line with the principles outlined in the National Education Policy (NEP-2020), there is a strong emphasis on multidisciplinary programs, which have the potential to tackle societal issues on a broader scale.

Vision, mission and objectives

Vision

Creating competent, integrated, efficient and context-sensitive Public Health Professionals for empowering health system

Mission

To improve the health of the diverse communities including rural, underserved, and global population through education, skill, research, outreach services, and creative partnerships.

Objectives

To develop Public Health professionals who shall:

- Apply the knowledge of Public Health Sciences to the community, health care delivery, research and population-based community health initiatives
- Ready to approach and address public health challenges in terms of Health Promotion, Disease Prevention and achieving wellness of the society
- Promote healthy lifestyles, research disease epidemiology and injury prevention as well as detect, prevent and respond to communicable diseases (including outbreaks) and non-communicable diseases
- Investigate disease outbreaks, their determinants and risks to improve health care delivery as well as quality and to influence policies and -programs

University Institute of Public Health Sciences, Maharshi Dayanand University, Rohtak

Curriculum framework for
Four Years Bachelor in Public Health Sciences (BPHS)

Semester	Discipline-Specific Courses (DSC) /Major Course	Minor (MIC)/Vocational (VOC)/ Skill Enhancement Courses (SEC)/ Internship	Multidisciplinary courses (MDC)	Ability Enhancement courses (AEC)	Dissertation	Value-Added Courses (VAC)	Total Credits
I	**DSC-A1 @ 4 credits** **DSC-A2 @ 4 credits**	**MIC1@4 credits** **SEC1@ 3 credits**	**MDC1 @ 3 credits**	**AEC1 @ 2 credits**	--	**VAC1 @ 2 credits**	**22**
	Human Anatomy, Physiology and Biochemistry (24IPHS401DS01) Basics of Public Health and Nutrition (24IPHS401DS02)	To be chosen from the courses offered by other streams Basic Laboratory Science Practicals (24IPHS401SE01)	To be chosen from the courses floated by the University	To be chosen from the courses floated by the University	--	To be chosen from the courses floated by the University	**22**
II	**DSC-A3 @ 4 credits** **DSC-A4 @ 4 credits**	**MIC2@4 credits** **SEC2@ 3 credits**	**MDC2 @ 3 credits**	**AEC2 @ 2 credits**	--	**VAC2 @ 2 credits**	**22**
	Introduction to Healthcare Delivery System (24IPHS402DS01) Basics of Health Promotion (24IPHS402DS02)	To be chosen from the courses offered by other streams Practical aspects of human disease related assays/tests (24IPHS402SE01)	To be chosen from the courses floated by the University	To be chosen from the courses floated by the University		To be chosen from the courses floated by the University	**22**
Students exiting the programme after securing 48 credits including 4 credits of summer internship will be awarded "UG Certificate in Public Health"							

III	**DSC-A5@ 4 credits** **DSC-A6@ 4 credits**	**MIC3@4 credits** **SEC3@ 3 credits**	**MDC3 @ 3 credits**	**AEC3 @ 2 credits**	--	**VAC3 @ 2 credits**	**22**
	Epidemiology, Biostatistics and Population Science (25IPHS403DS01) Environmental Health and Climate Change (25IPHS403DS02)	To be chosen from the courses offered by other streams Practical training and visits in healthcare facilities (25IPHS402SE01)	To be chosen from the courses floated by the University	To be chosen from the courses floated by the University		To be chosen from the courses floated by the University	**22**
IV	**DSC-A7@ 4 credits** **DSC-A8@ 4 credits** **DSC-A9@ 4 credits** **DSC-A10@ 4 credits**	**MIC4 (VOC) @4 credits**	**--**	**AEC4 @ 2 credits**	--	**VAC4 @ 2 credits**	**24**
	Public Health Nutrition (25IPHS404DS01) Communicable and Non-communicable Diseases (25IPHS404DS02) Reproductive, Maternal, Neonatal, Child and Adolescent Health (25IPHS404DS03) Social and Behavioural Sciences (25IPHS404DS04)	To be chosen from the courses offered by other streams	**--**	To be chosen from the courses floated by the University	--	To be chosen from the courses floated by the University	**24**
Students exiting the programme after securing 94 credits including 4 credits of summer internship will be awarded "UG Diploma in Public Health"							
V	**DSC-A11@ 4 credits** **DSC-A12@ 4 credits** **DSC-A13@ 4 credits** **DSC-A14@ 4 credits**	**MIC5 (VOC) @4 credits** **Internship @4 credits**	**--**	**--**	--	**--**	**24**

	Public Health Management (26IPHS405DS01) Mental Health (26IPHS405DS02) Vaccines, Drugs and Toxicology (26IPHS405DS03) Occupational Health (26IPHS405DS04)	To be chosen from the courses offered by other streams Internship @4 credits (26IPHS405IN01)	--	--		--	**24**
VI	**DSC-A15@ 4 credits** **DSC-A16@ 4 credits** **DSC-A17@ 4 credits** **DSC-A18@ 4 credits**	**MIC6 (VOC) @4 credits** **SEC4@ 2 credits**	**--**	**--**	--	**--**	**22**
	Health Policy, Planning and Regulation (26IPHS406DS01) Health Informatics (26IPHS406DS02) Health Economics and Financing (26IPHS406DS03) Basics of Public Health Research (26IPHS406DS04)	To be chosen from the courses offered by other streams Project/ Field work @ 2 credits (26IPHS406PD01)	--	--		--	**22**

Students exiting the programme upon securing 136 credits will be awarded "Bachelor in Public Health"

Four credits of Internship earned by a student during summer internship after 2nd Semester or 4th Semester will be counted in 5th Semester of a student who pursue 3 years UG degree programme without taking exit option.

VII	**DSC-H1@ 4 credits** **DSC-H2@ 4 credits** **DSC-H3@ 4 credits** **DSC-H4@ 4 credits** **DSC-H5@ 4 credits**	**SEC4@4 credits** **OR** **MIC7 (VOC) @4 credits** **OR** **Internship@4 credits**	**--**	**--**	--	**--**	**24**
	Health Geography and International Health (27IPHH407DS01) Health Promotion Approaches, Methods and evaluation (27IPHH407DS02) Roles and responsibilities of NGO's, CBOs, iNGOs (27IPHH407DS03) Laws, Acts and Ethics in Public Health (27IPHH407DS04) Social and Behavioral change communication (27IPHH407DS05)	Internship (27IPHH407IN01)					**24**
VIII (4 year UG Hon.)	**DSC-H6@ 4 credits** **DSC-H7@ 4 credits** **DSC-H8@ 4 credits** **DSC-H9@ 4 credits** **DSC-H10@ 4 credits**	**SEC4@4 credits** **OR** **MIC7 (VOC) @4 credits** **OR** **Internship@4 credits**	**--**	**--**	--	**--**	**24**
	Design and Methods of Health Surveys (27IPHH408DS01) Health Mapping and GIS application in health (27IPHH408DS02)	Current issues in Public Health (Seminar/ Assignments/GD) @4 credits (27IPHH408SE01)					**24**

	Advanced Epidemiology and Biostatistics (27IPHH408DS03) Food Toxicology and Food Safety (27IPHH408DS04) Water Sanitation and Hygiene (WASH) (27IPHH408DS05)						
VIII (4 year UG Hon. With Research)	**DSC-H6@ 4 credits** **DSC-H7@ 4 credits**	**SEC4@4 credits** **OR** **MIC7 (VOC) @4 credits** **OR** **Internship@4 credits**	**--**	**--**	Research Project/ Dissertation @ 12 credits	**--**	**24**
	Design and Methods of Health Surveys (27IPHH408DS01) Health Mapping and GIS application in health (27IPHH408DS02)	Current issues in Public Health (Seminar/ Assignments/GD) (27IPHH408SE01)			Research Project/ Dissertation @ 12 credits (27IPHH408PD01)		

Regulations Governing Four Years Bachelor in Public Health Sciences (BPHS)

Eligibility Conditions

Eligibility conditions for admission in Bachelor in Public Health Sciences (BPHS) program are as follows:

The candidate must have passed 10+2 with streams (Medical/Non-Medical) having subjects i.e. Physics, Chemistry, Biology/Biotechnology OR Physics, Chemistry, Mathematics, and English as a compulsory subject. The candidate must have minimum aggregate of 60% marks (57 % marks for SC/ST/Blind/Visually and differently abled candidates of Haryana only) in four subjects English, Physics, Chemistry, Mathematics/Biology/Biotechnology.

The admissions shall be made only on the basis of entrance exam conducted by the university.

The reservation policy of Haryana Govt. will be applicable. Other conditions of the admissions will be applicable as per university admission guidelines.

Total Intake = 30 students

Duration of the Course:

Bachelor in Public Health Sciences (BPHS) shall be of Four Years duration having 8 Semesters of teaching and training. The program shall have an option of exit after each year successful completion awarding,

- Certificate in public health after first year
- Diploma in public health after two years
- Bachelor degree in public health after three years,
- Option of choosing UG Hons. degree and UG Research Degree options and award thereof

The credits to be awarded shall be as per university regulations. See details in curriculum framework for further details.

Medium of Instruction and Examination shall be English.

Requirements to Complete the Course:

There will be requirement to earn necessary credits to obtain the certificate, diploma or degrees at UG and PG levels. Please see details in curriculum framework.

Learning outcomes

Program graduates shall be able to:

- Use epidemiologic methods to analyze patterns of disease and injury and discuss application to control problems
- Implement, interpret and analyze data from public health surveillance activities
- Understand the relationship between environmental factors and community health; discuss remediation for environmental health problems
- Identify and apply appropriate statistical methods to analyze administrative data and describe a Public Health problem
- Demonstrate the ability to apply principles of leadership, policy development, budgeting and program management in the planning, implementation and evaluation of health programs for individuals and populations.
- Address behavioral, social and cultural factors that impact individual and population health and health disparities over the life course
- Use research tools and analytical methods to critically analyze, monitor and assess the health status of populations
- Demonstrate effective communication skills, orally and in writing
- Describe and discuss essential services that Public Health programs provide to protect and improve the health of populations
- Interpret the impact of policies and legislation on individual and population health
- Understand cultural differences among populations and interact sensitively, effectively, and professionally with persons from diverse backgrounds
- Compare and contrast health challenges encountered in different regions across the globe and understand the variety of strategies employed to address them.

Training, Teaching and Learning Activities:

A candidate pursuing the course shall work in the Institute as a full-time candidate. No candidate shall join any other course of study or appear for any other examination conducted by this university or any other university in India or abroad during the period of study.

Every candidate shall take part in seminars, group discussions etc. Every candidate shall

attend teaching and learning activities during each semester as prescribed by the Institute and not absent himself /herself without valid reasons.

A list of teaching and learning activities designed to facilitate acquiring of essential knowledge and skills outlined is given below:

The theory classes shall be equally blended with various practical applications and group activities such as:

1. Assignment
2. Group Discussions
3. Role Plays
4. Workshops
5. Field Visit (Studies)

All these are aimed for the overall development of the emerging health workers, critical analysis and assessment of situations, creative thinking and proactive measures towards system management

Lectures: For all subjects lectures shall be conducted by the faculty.

Field Visits: Health Sub-Centre (HSC), Primary Health Centre (PHC), Community Health Centre (CHC), Health and Wellness Centre (HWC), District Hospital (DH), , Anganwadi, DHO office, Govt and Private Hospitals and Medical Colleges, , PGIMS, Sewage treatment plant, Water purification plant, Bio-medical Waste Management Units/Plants, milk dairy, Nearby industries, Pollution Control Board, and other institutions of Public Health importance.

Regulations regarding,

1. Attendance requirements
2. Course breakup of internal and external components
3. Evaluation criteria for internal and external components
4. Promotion criteria
5. Internship rules and guidelines
6. Field visits rules and guidelines

Other requirements and guidelines will be applicable as per “Common Ordinance” prescribed by the university and subsequent amendments from time to time. In any case, where the common ordinance is silent or not specific, the Institute can device the mechanism at its own level.

SCHEME OF EXAMINATION FOR BPHS

Theory:

Each theory paper shall have components of internal and external marks in the break up of 30 and 70 marks respectively.

The internal marks of 30 shall have components of :

- Sessional marks: 20
- Attendance marks: 5 and
- Assignments, Presentations, student teacher interaction: 5 Marks

The pattern of Question Papers for End-Semester theory examinations shall be as under:

Question 1: Answer to Question no. 1 shall be compulsory short answer type questions from all units

Question 2 :Two questions from Unit-I and the student should answer one question

Question 3 : Two questions from Unit-II and the student should answer one question

Question 4 : Two questions from Unit-III and the student should answer one question

Question 5 : Two questions from Unit-IV and the student should answer one question
All the questions shall carry equal marks.

Practical:

Each practical paper shall be evaluated in combine for the maximum marks allotted.

The evaluation criteria of Field visits, Internships, research project/dissertations shall be as per university ordinance.

Formative assessments for SEC, MIC, VAC, MDC, AEC and Internship components

Formative Assessment Models

1. For Skill Enhancement Courses (SEC)

For three credits practical

	Marks distribution
Regular assessment through observation and class discussion	10
Lab work (practical file) / Field work (report)/Portfolio	30
Assignment/Case study / Mini project (2 X 10)	20
Seminar / Presentation	10
Attendance	05
Total	**75**

2. For Ability Enhancement Courses

For two credits theory

	Marks distribution
Written test (2 X 5)	10
Peer discussion / Debate / Extempore speech (2X 10)	20
Role play	05
Essay / Article / Report writing	10
Attendance	05
Total	**50**

3. For Value Added Courses

For two credits theory

	Marks distribution
Written test (2 X 10)	20
Class assignments / Case study / Mini project (2 X 5)	10
Quiz / seminar / Group discussion / Debate (2 X 7.5)	15
Attendance	05
Total	**50**

For two credits practical

	Marks distribution

Regular assessment through observation and class discussion	20
Field work (Report)/Mini project	15
Assignment (2 X 5)	10
Attendance	05
Total	**50**

For one credit theory and one credit practical

	Marks distribution
Written test (2 X 10)	20
Class Assignment (1 X 5)	05
Case study / Mini project (1 X 10)	10
Seminar / Presentation (1 X 10)	10
Attendance	05
Total	**50**

4. For Multidisciplinary Course

For three credits theory

	Marks distribution
Written test (2 X 10)	20
Class assignments / Case study / Mini project (2 X 10)	20
Book review / Essay / Seminar (1 X 10)	10
Quiz / Group discussion / Debate (2 X 10)	20
Attendance	05
Total	**75**

For two credits theory and one credit practical

	Marks distribution
Written test (2 X 10)	20
Lab work (practical file) / Field work (report)/Portfolio	20
Assignment/Case study / Mini project (2 X 10)	20
Seminar / Presentation	10
Attendance	05
Total	**75**

For three credits practical

	Marks distribution
Regular assessment through observation and class discussion	10
Lab work (practical file) / field work (report)/Portfolio	30
Assignment/Case study / Mini project (2 X 10)	20
Seminar / Presentation	10
Attendance	05
Total	**75**

For one credit theory and two credits practical

	Marks distribution
Written test (2 X 10)	20
Lab work (practical file) / Field work (report)/ Portfolio	20
Case study / Mini project (1 X 10)	10
Assignment/Seminar / Presentation (2 X 10)	20
Attendance	05
Total	**75**

6. For UG/PG Practical Courses

For four credits practical

	Marks distribution
Regular assessment through observation and class discussion	20
Lab work (practical file) / field work (report)/Portfolio	30
Assignment/Case study / Mini project (3 X 10)	30
Seminar / Presentation (2 X 7.5)	15
Attendance	05
Total	**100**

6. Internship Evaluation

After completion of internship, students need to prepare a comprehensive report highlighting their learning and takeaways during the internship period as per **MDUR Internship Regulations 2025**. The report shall be signed by the Internship Supervisor from respective UTD/Centre/College and Mentor from internship providing organizations. Evaluation of internship report and viva-voce will be jointly conducted by Internship Supervisor and Mentor on the time and date notified by the concerned HoDs/Directors/Principals. The mentor from host organization may participate in the evaluatation through online/offline mode. In case of non-availability of respective mentor, the available relevant mentor as decided by the concerned

HOD/Director/Principal may be utilized for the purpose of evaluation.

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Distribution of marks will be as below:

<table>
<tr><th>S. No.</th><th>Components</th><th>Employability-Oriented Internship</th><th>Research-Oriented Internship</th></tr>
<tr><td>1</td><td>Assessment by Mentor
<table>
<tr><td>S.No.</td><td>Details</td><td>Marks</td></tr>
<tr><td>1</td><td>Skills learned</td><td>15</td></tr>
<tr><td>2</td><td>Regularity</td><td>10</td></tr>
<tr><td>3</td><td>Conduct</td><td>5</td></tr>
<tr><td></td><td>Total (30)</td><td></td></tr>
</table></td><td>30</td><td>30</td></tr>
<tr><td>2</td><td>Internship Report</td><td>40</td><td>40</td></tr>
<tr><td>3</td><td>Viva-Voce</td><td>30</td><td>30</td></tr>
</table>

EVALUATION OF PROJECT REPORT / DISSERTATION

In case of the Project reports/Dissertation/Research Project, the assessment shall be jointly carried out by the internal and external examiners. There shall be no Internal assessment component for Dissertation / Project Report. External examiners shall be invited from amongst the panel of examiners (ordinarily not below the rank of Associate Professor) recommended by the concerned Board of Studies.

SEMESTER WISE SCHEME OF EXAMINATION

Semester I

Course Code	Paper	Internal marks	Max. External marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
24IPHS401DS01	Human Anatomy, Physiology and Biochemistry	30	70	100	40	4	4 hrs/wk
24IPHS401DS02	Basics of Public Health and Nutrition	30	70	100	40	4	4 hrs/wk
24IPHS401SE01	Basic Laboratory Science practicals	--	--	75 (Combined internal and external)	30	3	6 hrs/wk
-	Minor (MIC)/Vocational courses (VOC)*	30	70	100	40	4	4 hrs/wk
-	Multidisciplinary courses (MDC)*	25	50	75	30	3	3 hrs/wk
-	Ability Enhancement courses (AEC)*	15	35	50	20	2	2 hrs/wk
-	Value- Added Courses (VAC)*	15	35	50	20	2	2 hrs/wk
Total				550	--	22	25 hrs/wk

*Minor (MIC)/Vocational (VOC), Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), Value- Added Courses (VAC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

There may be a minor change in the MIC, MDC, VAC and AEC as per course chosen by the candidate from the common pool of courses.

The assessment criteria for the SEC, MIC, MDC, AEC, VAC shall be as per Formative assessment criteria explained earlier.

Semester II

Course Code	Paper	Internal marks	Max. External marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
24IPHS402DS01	Introduction to Healthcare Delivery System	30	70	100	40	4	4 hrs/wk
24IPHS402DS02	Basics of Health Promotion	30	70	100	40	4	4 hrs/wk
24IPHS402SE01	Practical aspects of human disease related assays/tests	--	--	75 (Combined internal and external)	30	3	6 hrs/wk
-	Minor (MIC)/Vocational courses (VOC)*	30	70	100	40	4	4 hrs/wk
-	Multidisciplinary courses (MDC)*	25	50	75	30	3	3 hrs/wk
-	Ability Enhancement courses (AEC)*	15	35	50	20	2	2 hrs/wk
-	Value- Added Courses (VAC)*	15	35	50	20	2	2 hrs/wk
Total				550		22	25 hrs/wk

*Minor (MIC)/Vocational (VOC), Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), Value- Added Courses (VAC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

There may be a minor change in the MIC, MDC, VAC and AEC as per course chosen by the candidate from the common pool of courses.

The assessment criteria for the SEC, MIC, MDC, AEC, VAC shall be as per Formative assessment criteria explained earlier.

Semester III

Course Code	Paper	Internal marks	Max. External marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
25IPHS403DS01	Epidemiology, Biostatistics and Population Science	30	70	100	40	4	4 hrs/wk
25IPHS403DS02	Environmental Health and Climate Change	30	70	100	40	4	4 hrs/wk
25IPHS403SE01	Practical training and visits in healthcare facilities	--	--	75 (Combined internal and external)	30	3	6 hrs/wk
-	Minor (MIC)/Vocational courses (VOC)*	30	70	100	40	4	4 hrs/wk
-	Multidisciplinary courses (MDC)*	25	50	75	30	3	3 hrs/wk
-	Ability Enhancement courses (AEC)*	15	35	50	20	2	2 hrs/wk
-	Value- Added Courses (VAC)*	15	35	50	20	2	2 hrs/wk
Total				550		22	25 hrs/wk

*Minor (MIC)/Vocational (VOC), Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), Value- Added Courses (VAC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

There may be a minor change in the MIC, MDC, VAC and AEC as per course chosen by the candidate from the common pool of courses.

The assessment criteria for the SEC, MIC, MDC, AEC, VAC shall be as per Formative assessment criteria explained earlier.

Semester IV

Course Code	Paper	Internal marks	Max. External marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
25IPHS404DS01	Public Health Nutrition	30	70	100	40	4	4 hrs/wk
25IPHS404DS02	Communicable and Non-communicable Diseases	30	70	100	40	4	4 hrs/wk
25IPHS404DS03	Reproductive, Maternal, Neonatal, Child and Adolescent Health	30	70	100	40	4	4 hrs/wk
25IPHS404DS04	Social and Behavioural Sciences	30	70	100	40	4	4 hrs/wk
-	Minor (MIC)/Vocational courses (VOC)*	30	70	100	40	4	4 hrs/wk
-	Ability Enhancement courses (AEC)*	15	35	50	20	2	2 hrs/wk
-	Value- Added Courses (VAC)*	15	35	50	20	2	2 hrs/wk
Total				600	--	24	28 hrs/wk

*Minor (MIC)/Vocational (VOC), Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), Value- Added Courses (VAC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

There may be a minor change in the MIC, MDC, VAC and AEC as per course chosen by the candidate from the common pool of courses.

The assessment criteria for the SEC, MIC, MDC, AEC, VAC shall be as per Formative assessment criteria explained earlier.

Semester V

Course Code	Paper	Internal marks	Max. External marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
26IPHS405DS01	Public Health Management	30	70	100	40	4	4 hrs/wk
26IPHS405DS02	Mental Health	30	70	100	40	4	4 hrs/wk
26IPHS405DS03	Vaccines, Drugs and Toxicology	30	70	100	40	4	4 hrs/wk
26IPHS405DS04	Occupational Health	30	70	100	40	4	4 hrs/wk
-	Minor (MIC)/Vocational courses (VOC)*	30	70	100	40	4	4 hrs/wk
26IPHS405IN01	Internship	Assessment as per formative assessment criteria explained earlier		100	40	4	8 hrs/wk
Total				600	--	24	28 hrs/wk

*Minor (MIC)/Vocational (VOC), Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), Value- Added Courses (VAC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

There may be a minor change in the MIC, MDC, VAC and AEC as per course chosen by the candidate from the common pool of courses.

The assessment criteria for the SEC, MIC, MDC, AEC, VAC shall be as per Formative assessment criteria explained earlier.

Semester VI

Course Code	Paper	Internal marks	Max. External marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
26IPHS406DS01	Health Policy, Planning and Regulation	30	70	100	40	4	4 hrs/wk
26IPHS406DS02	Health Informatics	30	70	100	40	4	4 hrs/wk
26IPHS406DS03	Health Economics and Financing	30	70	100	40	4	4 hrs/wk
26IPHS406DS04	Basics of Public Health Research	30	70	100	40	4	4 hrs/wk
-	Minor (MIC)/Vocational courses (VOC)*	30	70	100	40	4	4 hrs/wk
26IPHS406PD01	Project/Field work, Project/ Field work (26IPHS406PD01)	Assessment as per formative assessment criteria explained earlier		50	20	2	4 hrs/wk
Total				550	--	22	24 hrs/wk

*Minor (MIC)/Vocational (VOC), Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), Value- Added Courses (VAC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

There may be a minor change in the MIC, MDC, VAC and AEC as per course chosen by the candidate from the common pool of courses.

The assessment criteria for the SEC, MIC, MDC, AEC, VAC shall be as per Formative assessment criteria explained earlier.

Semester VII

Course Code	Paper	Internal marks	Max. External marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
27IPHH407DS01	Health Geography and International Health	30	70	100	40	4	4 hrs/wk
27IPHH407DS02	Health Promotion Approaches, Methods and evaluation	30	70	100	40	4	4 hrs/wk
27IPHH407DS03	Roles and responsibilities of NGO's, CBOs, iNGOs	30	70	100	40	4	4 hrs/wk
27IPHH407DS04	Laws, Acts and Ethics in Public Health	30	70	100	40	4	4 hrs/wk
27IPHH407DS05	Social and Behavioral change communication	30	70	100	40	4	4 hrs/wk
27IPHH407IN01	Internship	Assessment as per formative assessment criteria explained earlier		100	40	4	8 hrs/wk
Total				600	--	24	28 hrs/wk

*Minor (MIC)/Vocational (VOC), Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), Value- Added Courses (VAC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

There may be a minor change in the MIC, MDC, VAC and AEC as per course chosen by the candidate from the common pool of courses.

The assessment criteria for the SEC, MIC, MDC, AEC, VAC shall be as per Formative assessment criteria explained earlier.

Semester VIII
(Bachelor in Public Health with Hons. Degree option)

Course Code	Paper	Internal marks	Max. External marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
27IPHH408DS01	Design and Methods of Health Surveys	30	70	100	40	4	4 hrs/wk
27IPHH408DS02	Health Mapping and GIS application in health	30	70	100	40	4	4 hrs/wk
27IPHH408DS03	Advanced Epidemiology and Biostatistics	30	70	100	40	4	4 hrs/wk
27IPHH408DS04	Food Toxicology and Food Safety	30	70	100	40	4	4 hrs/wk
27IPHH408DS05	Water Sanitation and Hygiene (WASH)	30	70	100	40	4	4 hrs/wk
27IPHH408SE01	Current issues in Public Health (Seminar/ Assignments /GD)	30	70	100	40	4	4 hrs/wk
Total				600	--	24	24 hrs/wk

*Minor (MIC)/Vocational (VOC), Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), Value- Added Courses (VAC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

There may be a minor change in the MIC, MDC, VAC and AEC as per course chosen by the candidate from the common pool of courses.

The assessment criteria for the SEC, MIC, MDC, AEC, VAC shall be as per Formative assessment criteria explained earlier.

Semester VIII
(Bachelor in Public Health with Research Degree option)

Course Code	Paper	Internal marks	Max. External marks	Total maximum marks	Minimum Marks to pass	Credits	Workload
27IPHH408DS01	Design and Methods of Health Surveys	30	70	100	40	4	4 hrs/wk
27IPHH408DS02	Health Mapping and GIS application in health	30	70	100	40	4	4 hrs/wk
27IPHH408SE01	Current issues in Public Health (Seminar/ Assignments/GD)	30	70	100	40	4	4 hrs/wk
27IPHH408PD01	Research Project/ Dissertation	As per university rule		300	120	12	24 hrs/wk
Total				600	--	24	36 hrs/wk

**Minor (MIC)/Vocational (VOC), Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), Value- Added Courses (VAC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

There may be a minor change in the MIC, MDC, VAC and AEC as per course chosen by the candidate from the common pool of courses.

The assessment criteria for the SEC, MIC, MDC, AEC, VAC shall be as per Formative assessment criteria explained earlier.

*Minor (MIC)/Vocational (VOC), Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), Value- Added Courses (VAC) will be chosen from the common pool of course baskets floated by the university. Evaluation shall also be done accordingly.

There may be a minor change in the MIC, MDC, VAC and AEC as per course chosen by the candidate from the common pool of courses.

The assessment criteria for the SEC, MIC, MDC, AEC, VAC shall be as per Formative assessment criteria explained earlier.

Selection and evaluation process of the courses from other departments/Institutes

To provide flexibility to the students for greater learning as per their choice and interest, the candidates shall be allowed to choose courses offered by other departments/Institutes under various heads i.e. Minor (MIC)/Vocational (VOC) Multidisciplinary courses (MDC), Ability Enhancement courses (AEC), Skill Enhancement Courses (SEC)/Value-Added Courses (VAC). The selection criteria of these type of courses and evaluation process shall be as per university guidelines.

Criteria for Declaring Pass

The registered students shall be awarded certificate, diploma, degrees as per university guidelines applicable. Please see details in curriculum framework.

Graduate attributes

Type of learning outcomes	**The Learning outcomes descriptors**
Disciplinary and interdisciplinary specific learning outcomes	• Comprehensive knowledge and coherent understanding of the chosen disciplinary/interdisciplinary areas. • Practical, professional, and procedural knowledge necessary for performing professional or highly skilled work/tasks related to the field(s) of study • Capacity to go beyond simply copying curriculum content knowledge to create solutions to particular problems
Generic Learning outcomes	• Complex problem-solving, Critical Thinking and Creativity • Communication Skills • Analytical reasoning/thinking • Research-related abilities • Coordination and collaboration with others • Value inculcation • Empathy • Autonomy, responsibility, and accountability • Environmental awareness and action • Community engagement and service

Letter Grades and Grade Points: The student's performance in a particular semester is gauged by the Semester Grade Point Average (SGPA), which is calculated from the grades. The Cumulative GPA (CGPA) is based on all grades earned after enrolling in the program

of study, while the Semester Grade Point Average (SGPA) is based on grades earned during the current term. University will mention marks obtained in each course and a weighted average of marks based on marks obtained in all the semesters taken together for the benefit of students.

Letter Grade	Grade Point
O (outstanding)	10
A+ (Excellent)	9
A (Very good)	8
B+ (Good)	7
B (Above average)	6
C (Average)	5
P (Pass)	4
F (Fail)	0
Ab (Absent)	0

When students take audit courses, they may be given pass (P) or fail (F) grade without any credits.

Computation of SGPA and CGPA

The UGC recommended the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

The SGPA is the ratio of the sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student,

i.e. **SGPA** (Si) = $\sum$(Ci x Gi) / $\sum$Ci
Where Ci is the number of credits of the ith course and Gi is the grade point scored by the student in the ith course.

Example for Computation of SGPA

Semester	Course	Credit	Letter Grade	Grade point	Credit Point (Credit x Grade)
I	Course 1	3	A	8	3 X 8 = 24
I	Course 2	4	B+	7	4 X 7 = 28
I	Course 3	3	B	6	3 X 6 = 18

I	Course 4	3	O	10	3 X 10 = 30
I	Course 5	3	C	5	3 X 5 = 15
I	Course 6	4	B	6	4 X 6 = 24
		20			139
	SGPA				139/20=**6.95**

The Cumulative Grade Point Average (CGPA) is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a program, i.e.

CGPA = ∑(Ci x Si) / ∑ Ci

where Si is the SGPA of the ith semester and Ci is the total number of credits in that semester.

Example for Computation of CGPA

Semester 1	**Semester 2**	**Semester 3**	**Semester 4**	**Semester 5**	**Semester 6**
Credit: 21 SGPA:6.9	Credit: 22 SGPA:7.8	Credit:25 SGPA:5.6	Credit: 26 SGPA:6.0	Credit: 26 SGPA: 6.3	Credit 25 SGPA 8.0
CGPA**= 6.73** (21 x 6.9 + 22 x 7.8 + 25 x 5.6 + 26 x 6.0 + 26 x 6.3 + 25 x 8.0)/145					

The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

Transcript (Format): University will issue a transcript for each semester as well as a cumulative transcript that reflects performance across all semesters based on the recommendations made above regarding letter grades, grade points, and SGPA and CCPA.

Syllabus and Course contents in

Bachelor in Public Health Sciences (BPHS)

Semester-I

Name of the Course	Human Anatomy, Physiology and Biochemistry	**Level**	**Major**
Course Code	24IPHS401DS01	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (30 Internal + 70 External)	**Workload**	4 Hours/week

Course Objectives:

To impart fundamental knowledge of the structure, functions of various parts, biochemical processes in various systems of the human body.

Course Outcomes:

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

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Identify the various tissues and organs of different systems of human body.
3. Describe the various homeostatic mechanisms and their imbalances.
4. Understand the normal development and transition in key functions across life course
5. Understand biochemical processes in various organs of the human body and interpret clinical biochemistry data.

Unit – I (15 h)

General Introduction: Definition of anatomical terminologies. Components of human cell, tissue, organ and their functions. Structural oganisation of the human body.

Blood (Haematology)

Composition and functions of blood. Functions of blood components. Disorders of blood components (Anemia, Leukocytosis/ Leukemia) etc. Hemoglobin: Introduction, functions, NAD value and significance.

Unit – II (15h)

Musculo Skeletal System

Overview of Muscle tissues, Skeletal muscle types, Functions of the Skeletal System, Bone Classification and Bone Structure, Different types of joints and their functions and characteristics.

Cardio vascular System

Physiology and Anatomy of Heart, Pulmonary v/s systemic circulation, Functions of CVS.

Endocrine System

Enumeration of different endocrine glands, their position, secretions, and their functions.

Unit – III (15 h)

Respiratory System

Anatomy of the organs and structures of the Respiratory system, Lungs and its functions.

Digestive System

Overview of the Digestive System, Digestive System Processes and Regulation.

Urinary System

Gross Anatomy of the Kidney, Functions of kidney, ureter, urinary bladder and urethra. Physical characteristics of urine.

Unit-IV (15h)

Central Nervous system

Different components of nervous system. Identification of different parts of the brain. Function of the Nervous System.

Lymphatic and Immune System

Anatomy of the Lymphatic and Immune Systems, Parts of Lymphatic System, and their functions

Reproductive System

Anatomy, Physiology and biochemistry of male and female Reproductive system.

Embryology and normal development and transition in key functions across life course

The transition in body and physiology in terms of physical growth, reproductive, neurodevelopment, and immunological responses.

Suggested Readings:

1. Ross and Wilson Anatomy and Physiology by Allison Grant Anne Waugh ISBN-9780323834612, Elsevier Publishers, Inc.
2. Understanding Anatomy and Physiology by Gale Sloan Thompson. ISBN- 9780803622876. F.A. Davis Company; Mac Win Pa edition
3. Human Physiology by Stuart Ira Fox. ISBN-9780071102070. McGrawHill
4. Applied Anatomy and Physiology by B D Chaurasia. ISBN- 9789390619658. CBS Publishers
5. Introduction to Human Anatomy and Physiology by Eldra Pearl Solomon. ISBN - 9780323239257 Elsevier UK / US

Name of the Course	Basics of Public Health and Nutrition	Level	Major
Course Code	24IPHS401DS02	Duration and credits	60hrs/4 credits
Max. Marks.	100 (30 Internal + 70 External)	Workload	4 Hours/week

Course Objectives:

1. To understand the concept of public health and its significance in promoting population health.
2. To explore the historical development of public health and its key milestones.
3. To analyse the core disciplines of public health and approaches of public health practice.
4. To evaluate the sources of global health data and their role in informing public health interventions.

Course Outcomes:

1. Upon completion of the course, the student will be able to:
2. Demonstrate a comprehensive understanding of the definition of health and its
3. determinants, including social determinants of health.
4. Identify the goals of public health and its role in disease prevention and health
5. promotion.
6. Analyse the historical evolution of public health and its impact on contemporary public
7. health policies and interventions.
8. Evaluate the structure and components of public health systems, both in India and globally, and assess the challenges and opportunities in strengthening these systems.

Unit – I (15 h)

Introduction to Public Health and Nutritional relevance:

Definition of health and its determinants, social determinants of health, Introduction to public health and its goals, Role of public health in disease prevention and health promotion, Basic of Public Health Nutrition, Concepts of nutrition and dietetics; nutrition epidemiology; essential nutrients, nutrition-related diseases, and food systems and sustainability; national nutrition programs and policies.

Unit – II (15h)

The Science and Practice of Public Health

Core disciplines of public health: epidemiology, biostatistics, environmental health and occupational health, social and behavioral sciences, nutrition and health interaction, health policy and management; Public health approaches to disease prevention and

health promotion; Interdisciplinary nature of public health practice; Public health ethics and professionalism.

Unit – III (15 h)

Global Health and Data Sources

Introduction to global health and data sources: WHO, UNICEF, World Bank, FAO, CDC, ILO, Census, SRS, NFHS, NSSO, SECC etc; Overview of key indicators of population health; Data collection methods and challenges in global health research; Use of health information systems for monitoring and evaluation.

Unit-IV (15h)

Public Health Systems: India and Global Perspectives

Structure and components of the public health system in India; Role of central and state government agencies in public health; Primary healthcare infrastructure and delivery mechanisms; Challenges and opportunities in strengthening the public health system; Overview of global public health initiatives: Primary Health Care; Millennium Development Goals (MDGs), Sustainable Development Goals (SDGs); National Health Policy, Health for All, Achievements and limitations of global health initiatives; Future directions in global public health policy and practice

Suggested Readings:

1. Public Health: What It Is and How It Works by Bernard J. Turnock" ISBN-1284069419, Jones and Bartlett Publishers, Inc.
2. Introduction to Public Healt" by Mary-Jane Schneider. ISBN-128419759X. Jones and Bartlett Publishers, Inc.
3. Introduction to Public Healt" by Mary Louise Fleming and Elizabeth parker. ISBN-9780729538909. Churchill Livingstone.
4. Public Health in India: Policy Shifts and Trends (Social Change in Contemporary India) by P. M. Arathi. ISBN- 9354793703. SAGE Publications Pvt. Ltd; 1st edition
5. An Introduction to Community and Public Health by James F. McKenzie and Robert R. Pinger. ISBN - 1284036596 Jones and Bartlett Learning.

Name of the Course	Basic Laboratory Science Practicals	Level	Skill Enhancement Course (SEC)
Course Code	24IPHS401SE01	**Duration and credits**	90 hrs/3 credits
Max. Marks.	75	**Workload**	6 Hours/week

Course Overview:

This practical course is designed to introduce first-year public health students from diverse backgrounds to essential laboratory techniques related to human anatomy and physiology. The course aims to develop practical skills, critical thinking abilities, and an understanding of laboratory safety protocols. Through hands-on experiments and demonstrations, students will gain foundational knowledge that will prepare them for further studies in public health.

Course Objectives:

1. To familiarize students with basic laboratory equipment, instruments, and techniques.
2. To develop competency in performing common laboratory experiments in biology.
3. To cultivate an understanding of scientific principles and their application in public health contexts.
4. To instil good laboratory practices, including safety precautions and proper documentation of experimental procedures and results.
5. To enhance critical thinking skills through analysis, interpretation, and communication of experimental data.

Course Outcomes

1. Demonstrate proficiency in the safe handling of laboratory equipment, chemicals, and biological materials, adhering to established safety protocols and regulations.
2. Apply basic principles of biology to conduct laboratory experiments and investigations relevant to public health.
3. Utilize a variety of laboratory techniques and instruments to collect, analyze, and interpret experimental data accurately and systematically.
4. Identify and troubleshoot common issues encountered during laboratory experiments, demonstrating problem-solving skills and adaptability.
5. Communicate experimental procedures, results, and conclusions effectively through written laboratory reports and oral presentations.

6. Apply basic statistical methods to analyze and interpret experimental data, drawing appropriate conclusions and implications for public health practice.
7. Develop a critical understanding of the ethical considerations and implications associated with laboratory research and its application in public health contexts.
8. Reflect on personal learning experiences and identify areas for further skill development and professional growth in laboratory science and public health.

1. Introduction to Microscopy and Cell Biology
- Experiment 1: Microscopic Examination of Cells
- Experiment 2: Blood Typing and Blood Cell Count

2. Musculoskeletal System
- Experiment 3: Muscle Contraction and Fatigue
- Experiment 4: Cardiovascular Function (Resting Heart Rate and Blood Pressure)

3. Respiratory and Digestive Systems
- Experiment 5: Cardiovascular Function (ECG)
- Experiment 6: Respiratory Function (Lung Capacity)
- Experiment 7: Digestive System Function (Enzymatic Digestion)

4. Urinary System and Neurological Reflexes
- Experiment 8: Renal Function (Urinalysis)
- Experiment 9: Neurological Reflexes

5. Sensory Perception and Endocrine System
- Experiment 10: Sensory Perception (Vision, Taste, Touch)
- Experiment 11: Endocrine System Function (Hormone Levels)

6. Reproductive System and Homeostasis
- Experiment 12: Reproductive System Function (Menstrual Cycle)
- Experiment 13: Homeostasis and Feedback Mechanisms

7. Data Analysis and Integration
- Data analysis and interpretation of experimental results
- Integration of concepts from previous experiments

8. Review and Assessment
- Review of key concepts and experimental techniques
- Practical assessment: conducting a final experiment under supervision
- Course evaluation and feedback session

Suggested Readings (Latest Edition only)

1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi.
2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill
3. Livingstone, New York
4. Physiological basis of Medical Practice-Best and Tailor. Williams and Wilkins Co,

Riverview, MI USA
5. Text book of Medical Physiology- Arthur C, Guyton and John.E. Hall. Miamisburg, OH, U.S.A.
6. Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A.
7. Textbook of Human Histology by Inderbir Singh, Jaypee brother's medical publishers, New Delhi.
8. Textbook of Practical Physiology by C.L. Ghai, Jaypee brother's medical publishers, New Delhi.
9. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee brother's medical publishers, New Delhi.

Reference Readings (Latest Editions)

1. Physiological basis of Medical Practice-Best and Tailor. Williams and Wilkins Co, Riverview, MI USA
2. Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
3. Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje, Academic Publishers Kolkata

Semester-II

Name of the Course	Introduction to Healthcare Delivery System	Level	Major
Course Code	24IPHS402DS01	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (30 Internal + 70 External)	**Workload**	4 Hours/week

Course Objectives:

1. To understand the historical development and evolution of healthcare delivery systems.
2. To analyze the structure and components of healthcare delivery systems.
3. To examine the roles and responsibilities of stakeholders within the healthcare system.
4. To evaluate different healthcare delivery models and their implications for patient care and outcomes.

Course Outcomes:

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

1. To understand about various health delivery systems.
2. To understand about various surveys, initiatives and schemes of the Government.
3. To explore healthcare financing mechanisms and their impact on access, quality, and cost of care and health insurances.
4. To understand the regulatory frameworks governing healthcare delivery and their influence on healthcare policies.

Unit – I (15 h)

Introduction to healthcare delivery system

Healthcare organizations and institutions, Primary, secondary, and tertiary care , Integration and coordination of care, Healthcare stakeholders (Patients and families , Healthcare providers, physicians, nurses, allied health professionals, Payers (government, private insurance, employers, Regulators and policymakers), social accountability framework (various community stakeholder linked bodies at various levels).

Unit – II (15h)

Quality and safety in healthcare

Healthcare Quality and Performance (Quality improvement initiatives, Healthcare metrics and benchmarks, Patient safety and risk management. Hand hygiene/Universal precautions, NABH/NABL Accreditation. Indian Public Health Standards at -Sub-centres (SC), Primary health centres (PHC), Community health centres (CHC).

Unit – III (15 h)

Healthcare Delivery Models and Financing

Overview of health economics and financing, Fee-for-service vs. value-based care, Managed care organizations, out of pocket expenses, Accountable care organizations, Patient-centric medical homes, Public vs. private health financing, Healthcare economics and cost containment strategies.

Unit-IV (15h)

Healthcare Policy and Regulation and global perspective

Healthcare reform initiatives, Healthcare laws and regulations, Ethical considerations in healthcare delivery, Comparative healthcare systems, Healthcare disparities and access issues, international healthcare delivery innovations, Emerging Trends in Healthcare Delivery, Future Directions and Challenges

Suggested Readings:

1. Healthcare in India: A Comprehensive Analysis of Policy and Systems by Rama V. Baru, published by Oxford University Press with ISBN 978-0199469543. Sarah Hodges' book
2. Public Health and Private Wealth: Stem Cells, Surrogates, and Other Strategic Bodies by Sarah Hodges' published by Oxford University Press with ISBN 978-0199463374.
3. India's Healthcare Industry: Innovation in Delivery, Financing, and Manufacturing by Lawton R. Burns, Gordon P. Karels, and Vijai Singh, published by Cambridge University Press with ISBN 978-1107196190.
4. Healthcare Management in India: Psycho-social and Neurological Aspects by S. K. Verma and Anil Kumar published by Springer with ISBN 978-9811575484.
5. Healthcare Delivery in India: Potential for Innovation by Kasturi Sen's published by SAGE Publications Pvt. Ltd with ISBN 978-9352807594.

Name of the Course	Basics of Health Promotion	Level	Major
Course Code	24IPHS402DS02	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (30 Internal + 70 External)	**Workload**	4 Hours/week

Course Objectives:

1. To introduce students to the fundamental concepts and principles of public health education and communication.
2. To familiarize students with key theoretical frameworks and models used in public health promotion.
3. To equip students with practical skills in designing, implementing, and evaluating public health communication campaigns.

4. **Course Outcomes:**

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

6. Demonstrate an understanding of the key concepts, theories, and principles underlying public health education and communication.
7. Analyze historical and contemporary examples of public health communication initiatives and their effectiveness.
8. Apply social and behavioral theories to the design of health promotion interventions and promotion strategies.
9. Develop skills in audience segmentation, message development, and selection of appropriate promotion channels.
10. Design and implement a public health communication campaign targeting a specific health issue or population group.
11. Reflect on personal learning and growth in understanding the role of communication in promoting health and preventing disease.

Unit – I (15 h)

Introduction to Public Health Promotion

Overview of public health education and promotion. Historical context and evolution of health education to health promotion. Role of communication in health promotion. Key concepts and principles in health promotion and communication. Ethical considerations in public health promotion.

Unit – II (15h)

Theoretical Foundations of Public Health Communication

Social and behavioral theories at macro, meso, and micro levels relevant to public health communication. Stages of health behaviour adoption. Application of theories to health behavior change interventions. Communication models and frameworks in public health (e.g., Diffusion of Innovation Theory, Ecological Model). Understanding audience segmentation and targeting in public health communication campaigns.

Unit – III (15 h)

Strategies and Methods in Public Health promotion

Development and implementation of public health communication campaigns. Selection and use of communication channels (e.g., mass media, social media, interpersonal communication). Designing effective health messages and materials. Use of technology in health communication and behaviour. Understanding behaviour change communication and management. Evaluation methods for assessing the impact of public health communication initiatives. Understanding social and behavioural change communication.

Unit-IV (15h)

Health Literacy and Cultural Competence in Public Health promotion

Importance of health literacy in effective communication. Strategies for enhancing health literacy among diverse populations. Understanding cultural influences on health beliefs and behaviours. Approaches to culturally competent communication in public health. Addressing health disparities through culturally sensitive messaging and interventions. Understanding the issues related to non-adherence or non-acceptance and societal influences.

Suggested readings:

1. Health Behavior: Theory, Research, and Practice by Karen Glanz, Barbara K. Rimer, and K. Viswanath, published by Jossey-Bass with ISBN 978-1118628980.
2. Social Marketing: Influencing Behaviours for Good by Nancy R. Lee and Philip Kotler, published by SAGE Publications Ltd with ISBN 978-1446275397.
3. Communication for Behavior Change: Volume I: Writing and Producing Radio Dramas by Everett M. Rogers, Arvind Singhal, and Pranav Budhathoki, published by SAGE Publications Pvt. Ltd with ISBN 978-9353289784.
4. Communicating Health: Strategies for Health Promotion by Nova Corcoran and Colleen M. Conway, published by SAGE Publications Ltd with ISBN 978-1529703441.
5. The Health Communication Handbook edited by Kevin B. Wright and Lisa Sparks, published by SAGE Publications Ltd with ISBN 978-0761921609.
6. Health Literacy from A to Z: Practical Ways to Communicate Your Health Message by Helen Osborne, published by Jones & Bartlett Learning with ISBN 978-1449600532.
7. Culture, Health, and Communication: A Sociocultural Perspective edited by Heidi E. Hamilton and Wen-ying Sylvia Chou, published by Routledge with ISBN 978-0415952251.
8. Global Health Communication Strategies in the 21st Century edited by Rachel E. Smith and Kathryn M. DeMaster, published by Jones & Bartlett Learning with ISBN 978-1284099749.

Name of the Course	Practical aspects of human disease related assays/tests	Level	Skill Enhancement Course (SEC)
Course Code	24IPHS402SE01	**Duration and credits**	90 hrs/3 credits
Max. Marks.	75	**Workload**	6 Hours/week

Course Overview:

This course focuses on providing practical skills and knowledge necessary for conducting assays and tests related to human diseases in public health settings. Students will learn various laboratory techniques, instrumentation, and methodologies commonly used in diagnosing and monitoring diseases. Emphasis will be placed on hands-on experience, data interpretation, quality control, and ethical considerations in assay testing.

Course Objectives:

1. To understand the principles underlying various assays and tests used in the diagnosis and monitoring of human diseases.
2. To gain proficiency in performing common laboratory techniques and operating relevant instrumentation.
3. To develop skills in interpreting assay results, troubleshooting, and quality control.
4. To explore ethical considerations and regulatory requirements associated with human disease assays and tests.
5. To apply practical knowledge to real-world scenarios in public health settings.

Course Outcomes:

1. Students will demonstrate a comprehensive understanding of the principles underlying various assays and tests used in diagnosing and monitoring human diseases.
2. Students will acquire proficiency in performing common laboratory techniques and operating relevant instrumentation, including molecular, immunological, microbiological, and biochemical assays.
3. Students will demonstrate an understanding of ethical principles and regulatory requirements governing human disease assays and tests, including patient confidentiality, data security, and compliance with relevant regulations.
4. Students will integrate practical knowledge gained from the course into real-world scenarios in public health settings, demonstrating the ability to apply laboratory techniques effectively for disease diagnosis, surveillance, and monitoring.

1. Introduction to Disease Assays and Tests
- Overview of common assays and tests used in diagnosing and monitoring human diseases
- Principles of assay design and execution
- Introduction to laboratory safety and biosafety practices

2. Molecular Techniques
- Polymerase Chain Reaction (PCR)
- Real-time PCR (qPCR)
- Nucleic acid extraction methods
- Gel electrophoresis and DNA/RNA visualization

3. Immunological Assays
- Enzyme-Linked Immunosorbent Assay (ELISA)
- Western blotting
- Flow cytometry
- Immunofluorescence techniques

4. Microbiological Techniques
- Culture-based methods for pathogen identification
- Antimicrobial susceptibility testing
- Microscopic examination of pathogens
- Serological assays for infectious diseases

5. Biochemical Assays
- Enzyme assays
- Spectrophotometry and colorimetric assays
- Chromatographic techniques (e.g., HPLC, GC)
- Mass spectrometry for biomarker analysis

6. Quality Control and Data Interpretation
- Principles of quality control in assay testing
- Statistical analysis of assay data
- Interpretation of assay results and troubleshooting common issues
- Reporting and documentation in laboratory testing

7. Ethical and Regulatory Considerations
- Ethical principles in human disease testing
- Regulatory requirements for laboratory testing (e.g., CLIA, FDA)
- Patient confidentiality and data security
- Case studies and discussion on ethical dilemmas in assay testing

Assessment:
- Practical laboratory exercises and demonstrations
- Written assignments and reports
- Quizzes and examinations
- Participation in class discussions and case studies

Resources:

- Textbooks and scientific literature on assay techniques and methodologies
- Online resources and laboratory manuals
- Guest lectures from experts in the field
- Access to laboratory facilities and instrumentation for hands-on training

Semester-III

Name of the Course	**Epidemiology, Biostatistics and Population Science**	**Level**	**Major**
Course Code	25IPHS403DS01	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To develop an understanding of the basic principles and concepts of epidemiology and biostatistics.
2. To equip students with knowledge and skills to measure, analyze, and interpret health and disease in populations.
3. To familiarize students with statistical tools and techniques used in public health research.
4. To explore the dynamics of population health and its implications in the Indian scenario.
5. To enable students to apply epidemiological and statistical methods to address public health issues.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Explain key epidemiological concepts and methods used to study health and disease in populations.
2. Apply statistical methods to organize, analyze, and interpret public health data.
3. Assess population health trends and demographic characteristics in the Indian context.
4. Design and conduct basic epidemiological studies, including data collection and analysis.
5. Formulate evidence-based strategies to address public health challenges.

Unit – I (15 h)

Unit 1: Principles of Epidemiology

Introduction to Epidemiology: Definition, objectives, and applications.
Epidemiological Measures: Measures of morbidity (incidence, prevalence) and mortality (crude, specific, standardized rates).
Types of Epidemiological Studies: Descriptive, analytical (case-control, cohort), and experimental studies.
Epidemiological Transition in India: Patterns of diseases and determinants.
Screening in Public Health: Concepts of sensitivity, specificity, predictive values, and ROC curves.

Unit – II (15h)

Unit 2: Basics of Biostatistics

Introduction to Biostatistics: Importance in public health, types of data, scales of measurement.
Data Presentation: Tabulation, graphical representation, and frequency distributions.
Measures of Central Tendency and Dispersion: Mean, median, mode, standard deviation, variance.

Probability and Distribution: Normal, binomial, and Poisson distributions.
Hypothesis Testing: Concepts of null and alternative hypotheses, p-values, confidence intervals, and significance levels.

Unit – III (15 h)

Unit 3: Population Science

Demography and Population Dynamics: Demographic transition, Population growth, structure, and composition.
Fertility and Mortality Trends in India: Measures and influencing factors.
Population Policies in India: Evolution and current policies.
Migration and Urbanization: Health implications and challenges.
Indicators of Health and Development: Human Development Index (HDI), gender indices, and Sustainable Development Goals (SDGs).

Unit-IV (15h)

Unit 4: Applications and Tools

Epidemiological Data Analysis: Use of statistical software (e.g. Epi Info) and interpretation of results.
Outbreak Investigation: Steps and case studies from India.
Public Health Surveys: Design, sampling methods, and questionnaire development.
Health Management Information Systems (HMIS): Role in Indian public health.
Emerging Issues: Non-communicable diseases, infectious diseases, environmental health, and COVID-19 in India.

Suggested Readings:

1. Bonita, R., Beaglehole, R., & Kjellström, T. (2006). Basic Epidemiology (2nd ed.). World Health Organization.
2. Olsen, R. E., & Joubert, R. L. (2009). Epidemiology: A Research Manual for South Africa (2nd ed.). Oxford University Press Southern Africa.
3. Aschengrau, A., & Seage III, G. R. (2020). Essentials of Epidemiology in Public Health (4th ed.). Jones & Bartlett Learning.
4. Centers for Disease Control and Prevention (CDC). (2012). Principles of Epidemiology: Workbook for Public Health Practice (3rd ed.). CDC.
5. Gupta, B. N. (2021). Introduction to Biostatistics (3rd ed.). CBS Publishers & Distributors.
6. Daniel, W. W., & Cross, C. L. (2018). Biostatistics: A Foundation for Analysis in the Health Sciences (11th ed.). Wiley.
7. Betty R. Kirkwood, Jonathan Sterne. Essentials of Medical Statistics, 2nd Edition, Blackwell Publishing
8. Sullivan, L. M. (2021). Essentials of Biostatistics in Public Health (3rd ed.). Jones & Bartlett Learning.
9. Yaukey, D., Anderton, D. L., & Lundquist, J. H. (2007). Demography: The Study of Human Population (4th ed.). Waveland Press.
10. Rajan, S. I. (2021). Population Studies: Key Issues and Contemporary Trends in India. Springer.
11. Stephenson, M. Z. (Ed.). (2004). Population and Health in Developing Countries. International Development Research Centre (IDRC).

Semester-III

Name of the Course	Environmental Health and Climate Change	Level	Major
Course Code	25IPHS403DS02	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To understand the relationship between environmental health and human well-being.
2. To identify and assess the impact of environmental pollutants on public health.
3. To explore the effects of climate change on ecosystems, biodiversity, and human health.
4. To examine sustainable practices for mitigating environmental health challenges in India.
5. To develop critical thinking to address environmental and climate-related health issues.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Demonstrate knowledge of the fundamental concepts of environmental health and its determinants.
2. Analyze the health impacts of climate change and propose mitigation strategies tailored to India.
3. Apply the principles of sustainable development to address environmental challenges.
4. Evaluate the effectiveness of national and global frameworks in mitigating environmental and climate health issues.
5. Develop community-based solutions to enhance resilience against environmental health threats.

Unit – I (15 h)

Unit 1: Introduction to Environmental Health

Definition, scope, and significance of environmental health.
Environmental factors influencing health: air, water, soil, and noise pollution.
Environmental health challenges in urban and rural India.
Environmental risk assessment and management: concept and approaches.
Role of public health professionals in addressing environmental health issues.

Unit – II (15h)

Unit 2: Climate Change and Human Health

Basics of climate science: greenhouse gases, global warming, and climate systems.
Impacts of climate change on human health: heatwaves, vector-borne diseases, respiratory issues.
Vulnerable populations: children, elderly, and socio-economically disadvantaged groups.
Climate-sensitive diseases in India: dengue, malaria, and heat-related illnesses.
Global and national frameworks for climate action: Intergovernmental Panel on Climate Change (IPCC), National Action Plan on Climate Change (NAPCC), One Health Concept.

Unit – III (15 h)

Unit 3: Sustainable Development and Environmental Protection

Sustainable development goals (SDGs) and their relevance to public health.
Principles of waste management: solid waste, biomedical waste, and e-waste.
Renewable energy and resource conservation strategies.

Environmental laws and policies in India: Water Act, Air Act, and Environmental Protection Act.
Role of community participation and awareness programs in environmental protection.

Unit-IV (15h)

Unit 4: Emerging Issues and Solutions in Environmental Health

Emerging environmental health threats: Microplastics, antimicrobial resistance (AMR).
Occupational and industrial health hazards.
Role of technology and innovation in environmental health (e.g., air quality monitoring systems).
Disaster management and resilience planning for climate-related events.
Case studies: Best practices in Indian states for addressing environmental health and climate change.

Suggested Readings:

1. Park, K. (2021). Park's Textbook of Preventive and Social Medicine (26th ed.). Banarsidas Bhanot Publishers.
2. Gupta, S. K. (2019). Environmental Health: Principles and Practices (1st ed.). CBS Publishers & Distributors Pvt Ltd.
3. Rastogi, S. C. (2019). Environmental Biotechnology (3rd ed.). New Age International Publishers.
4. Narayanasamy, K. & Karuppiah, S. (2020). Climate Change and Public Health: Impacts and Adaptation Strategies (1st ed.). CRC Press.
5. Misra, S. P., & Pandey, S. N. (2017). Essential Environmental Studies (3rd ed.). Ane Books Pvt. Ltd.
6. Gadgil, M. & Guha, R. (2013). Ecology and Equity: The Use and Abuse of Nature in Contemporary India (Reprint ed.). Routledge.
7. Friis, R. H. (2018). Essentials of Environmental Health (3rd ed.). Jones & Bartlett Learning.
8. Dharmendra, S., & Sharma, S. K. (2019). Environmental Pollution and Health Hazards (2nd ed.). Narosa Publishing House.
9. McMichael, A. J., Montgomery, H., & Costello, A. (2020). Climate Change and Human Health: Risks and Responses (2nd ed.). World Health Organization.
10. Kaushik, A., & Kaushik, C. P. (2020). Perspectives in Environmental Studies (6th ed.). New Age International Publishers.

Semester-III

Name of the Course	**Practical training and visits in healthcare facilities**	**Level**	**Major**
Course Code	25IPHS403SE01	**Duration and credits**	90hrs/3 credits
Max. Marks.	75	**Workload**	6 Hours/week

Course Objectives

1. Understand the structure, organization, and functioning of various healthcare facilities, including hospitals, clinics, and community health centers.
2. Acquire hands-on experience in essential public health practices, such as patient interaction, health data collection, and environmental health assessments.

3. Cultivate professional behavior and communication skills required for effective collaboration within healthcare settings.
4. Evaluate the delivery of public health services, identify gaps, and suggest potential improvements.
5. Apply theoretical knowledge of public health to real-world scenarios observed during facility visits.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Describe the roles and functions of different healthcare facilities in providing preventive, curative, and rehabilitative care.
2. Successfully conduct basic public health activities, such as health education and environmental inspections, under supervision.
3. Analyze and report health data collected during visits to healthcare facilities.
4. Propose actionable solutions to improve the quality and accessibility of healthcare services based on practical observations.
5. Display ethical, professional, and culturally sensitive conduct while working in diverse healthcare settings.

1. Orientation visit to a healthcare facility to observe the organizational structure and functioning.
2. Patient registration and record maintenance to understand administrative processes in healthcare.
3. Hand hygiene practice to learn proper techniques and importance in infection prevention.
4. Observation of immunization practices, including vaccine administration and cold chain maintenance.
5. Biomedical waste management to study segregation, handling, and disposal processes.
6. Basic first aid training to learn Cardiopulmonary Resuscitation (CPR), wound care, and minor injury management.
7. Environmental health inspection of water supply, sanitation, and hygiene practices.
8. Health education activity to plan and deliver sessions on topics like personal hygiene or nutrition.
9. Observation of pharmacy operations to understand medication storage, distribution, and patient counseling.
10. Patient interaction and case study documentation to understand patient experiences and healthcare processes.
11. Community health survey to collect basic data on health behaviors or disease patterns.
12. Participation in health camps to assist with screenings, awareness campaigns, or vaccination drives.

Suggested Readings:

1. WHO. (2008). Essential Environmental Health Standards in Health Care. World Health Organization.
2. Bonita, R., Beaglehole, R., & Kjellström, T. (2006). Basic Epidemiology (2nd ed.). World Health Organization.
3. Allegranzi, B., & Pittet, D. (2009). Role of Hand Hygiene in Healthcare-Associated Infection Prevention. Journal of Hospital Infection, 73, 305-315.
4. Ghosh, S. (2013). Handbook of Health Education and Community Pharmacy. CBS Publishers & Distributors.
5. Gupta, S., & Mahajan, B. K. (2021). Textbook of Preventive and Social Medicine (5th ed.). Jaypee Brothers Medical Publishers.
6. WHO. (2014). Immunization in Practice: A Practical Guide for Health Staff. World Health

Organization.
7. HSE. (2021). Management of Healthcare Waste (4th ed.). Health and Safety Executive.
8. American Heart Association. (2020). Basic Life Support (BLS) Provider Manual. American Heart Association.
9. Park, K. (2021). Park's Textbook of Preventive and Social Medicine (26th ed.). Bhanot Publishers.
10. Marieb, E. N., & Hoehn, K. (2018). Human Anatomy & Physiology (11th ed.). Pearson.
11. Finkel, R., Cubeddu, L. X., & Clark, M. A. (2019). Pharmacology (6th ed.). Wolters Kluwer Health.
12. WHO. (2010). Planning and Implementing Health Promotion in Primary Health Care. World Health Organization.

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Semester-1V

Name of the Course	**Public Health Nutrition**	**Level**	**Major**
Course Code	25IPHS404DS01	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To understand the fundamentals of nutrition and its role in promoting public health.
2. To assess the nutritional status of populations and identify major nutrition-related health issues in India.
3. To explore the relationship between nutrition, disease prevention, and health promotion.
4. To analyze policies, programs, and interventions aimed at improving nutrition and food security.
5. To develop skills for planning and implementing community-based nutrition interventions.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Explain the role of nutrition in health promotion and disease prevention.
2. Identify and analyze key nutritional problems affecting populations in India.
3. Evaluate the impact of national and international nutrition programs and policies.
4. Design and implement community-based nutrition interventions and education programs.
5. Apply tools and methods to assess nutritional status and dietary patterns in various populations.

Unit – I (15 h)

Unit 1: Fundamentals of Nutrition

Macronutrients and micronutrients: types, sources, and functions.
Nutritional requirements across the lifecycle: infants, children, adolescents, adults, pregnant and lactating women, and elderly.
Dietary guidelines for Indians: Recommended Dietary Allowances (RDAs).
Nutrition assessment: anthropometry, biochemical, clinical, and dietary methods.
Nutritional epidemiology: tools and methods to study diet-disease relationships.

Unit – II (15h)

Unit 2: Nutrition and Public Health Issues in India

Malnutrition in India: undernutrition, protein-energy malnutrition (PEM), and micronutrient deficiencies (iron, vitamin A, iodine).
Non-communicable diseases (NCDs) related to diet: obesity, diabetes, hypertension, cardiovascular diseases.
Food safety and hygiene: foodborne diseases, adulteration, and contamination.
Role of nutrition in immunity and infectious diseases.
Cultural, social, and economic factors influencing dietary patterns in India.

Unit – III (15 h)

Unit 3: Nutrition Programs and Policies in India

National nutrition programs: Integrated Child Development Services (ICDS), Mid-Day Meal Scheme, and Poshan Abhiyaan.

Policies addressing food security and nutrition: Public Distribution System (PDS), National Food Security Act (NFSA).

Role of international organizations: WHO, UNICEF, FAO, and WFP in nutrition improvement.

Monitoring and evaluation of nutrition programs.

Role of public health professionals in implementing and evaluating nutrition policies.

Unit-IV (15h)

Unit 4: Planning and Implementing Nutrition Interventions

Community-based nutrition education and counseling.

Behavior change communication (BCC) and social marketing for improving dietary habits.

Planning a balanced diet for individuals and populations: tools and techniques.

Nutrition interventions during emergencies and disasters.

Case studies: successful nutrition intervention models in Indian states. Fortified Nutrition and preparations.

Suggested Readings:

1. Gibney, M. J., Lanham-New, S. A., Cassidy, A., & Vorster, H. H. (2009). Introduction to Human Nutrition (2nd ed.). Wiley-Blackwell.
2. Park, K. (2021). Park's Textbook of Preventive and Social Medicine (26th ed.). Banarsidas Bhanot Publishers.
3. Rao, B. S. N., Deosthale, Y. G., & Pant, K. C. (2019). Nutritive Value of Indian Foods (2nd ed.). National Institute of Nutrition, ICMR.
4. Swaminathan, M. (2017). Essentials of Food and Nutrition: Volume 1 & 2 (2nd ed.). The Bangalore Printing and Publishing Co. Ltd.
5. Srilakshmi, B. (2021). Nutrition Science (8th ed.). New Age International Publishers.
6. Stamler, J., Stamler, R., & Neaton, J. D. (2010). Nutrition and Cardiovascular Disease: An International Perspective (1st ed.). Marcel Dekker.
7. Gopalan, C., Sastri, B. V. R., & Balasubramanian, S. C. (2012). Nutritive Value of Indian Foods (Updated ed.). National Institute of Nutrition, ICMR.
8. Mahan, L. K., & Raymond, J. L. (2020). Krause's Food & the Nutrition Care Process (15th ed.). Elsevier.
9. WHO. (2006). Food and Nutrition Policy for Schools: A Tool for the Development of School Nutrition Programs in the European Region (1st ed.). World Health Organization.
10. Shills, M. E., Shike, M., Ross, A. C., Caballero, B., & Cousins, R. J. (2017). Modern Nutrition in Health and Disease (11th ed.). Lippincott Williams & Wilkins.

Semester-IV

Name of the Course	**Communicable and Non-communicable Diseases**	**Level**	**Major**
Course Code	25IPHS404DS02	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To understand the epidemiology, etiology, and prevention of major communicable and non-communicable diseases (NCDs) in India.
2. To analyze the social, environmental, and behavioral determinants of diseases.
3. To identify and evaluate strategies for disease control and management in communities.
4. To assess the role of public health systems and policies in addressing disease burdens.
5. To develop skills to design and implement disease prevention and health promotion programs.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Demonstrate knowledge of the epidemiology and prevention of communicable and non-communicable diseases in India.
2. Analyze the determinants and risk factors contributing to the disease burden.
3. Evaluate the effectiveness of national disease control programs and policies.
4. Develop community-based strategies for disease prevention and health promotion.
5. Collaborate in public health interventions to address emerging and re-emerging diseases.

Unit – I (15 h)

Unit 1: Introduction to Communicable and Non-Communicable Diseases

Definitions, differences, and the burden of diseases in India.
Modes of transmission: direct, indirect, and vector-borne diseases.
Risk factors for NCDs: behavioral, genetic, environmental, and social.
Global and Indian trends in disease epidemiology: Disability-Adjusted Life Year (DALY), mortality, morbidity.
Role of surveillance systems in disease monitoring and control (IDSP and NCD surveillance programs in India).

Unit – II (15h)

Unit 2: Communicable Diseases

Major communicable diseases in India: Tuberculosis, Malaria, HIV/AIDS, Dengue and Chikungunya, Hepatitis (A, B, and E)
Preventive measures: vaccination, vector control, sanitation, and hygiene.
National disease control programs for communicable diseases: Revised National Tuberculosis Control Programme (RNTCP), National Vector Borne Disease Control Programme (NVBDCP), and National AIDS Control Programme (NACP).
Outbreak investigation and response: principles and practices.
Emerging and re-emerging infectious diseases: Nipah virus, Zika virus, and AMR.

Unit – III (15 h)

Unit 3: Non-Communicable Diseases (NCDs)

Major NCDs in India: Cardiovascular diseases, Diabetes, Cancer, Chronic respiratory diseases, Mental health disorders
Risk reduction strategies: tobacco and alcohol control, physical activity, and healthy diets.
Screening and early diagnosis of NCDs.
National programs for NCD control: National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases, and Stroke (NPCDCS) and National Tobacco Control Programme (NTCP).
Role of lifestyle interventions in the prevention and management of NCDs.

Unit-IV (15h)

Unit 4: Integrated Disease Prevention and Control Strategies

Comprehensive approaches to communicable and non-communicable diseases.
Community-based interventions for disease prevention and health promotion.

Role of primary healthcare in disease management.
Policy frameworks addressing communicable and non-communicable diseases in India.
Case studies: successful disease control programs in India.

Suggested Readings:

1. Park, K. (2021). Park's Textbook of Preventive and Social Medicine (26th ed.). Banarsidas Bhanot Publishers.
2. Bonita, R., Beaglehole, R., & Kjellström, T. (2006). Basic Epidemiology (2nd ed.). World Health Organization.
3. Murray, C. J. L., & Lopez, A. D. (1996). Global Burden of Disease: A Comprehensive Assessment of Mortality and Disability (1st ed.). Harvard School of Public Health.
4. Heymann, D. L. (2015). Control of Communicable Diseases Manual (20th ed.). American Public Health Association.
5. Beaglehole, R., Bonita, R., & Magnusson, R. (2011). Global Public Health: A New Era (2nd ed.). Oxford University Press.
6. Ananthanarayan, R., & Paniker, J. (2020). Ananthanarayan and Paniker's Textbook of Microbiology (12th ed.). Universities Press.
7. WHO. (2018). Noncommunicable Diseases: Key Facts and Figures (1st ed.). World Health Organization.
8. Sharma, S. K. (2017). Epidemiology and Management of Communicable and Non-Communicable Diseases (1st ed.). CBS Publishers & Distributors Pvt Ltd.
9. Allotey, P., & Reidpath, D. D. (2019). Communicable and Non-Communicable Diseases: Epidemiology, Prevention, and Control (1st ed.). Routledge.
10. Gupte, S. (2016). The Short Textbook of Public Health Medicine for the Tropics (5th ed.). Jaypee Brothers Medical Publishers.

Semester-IV

Name of the Course	**Reproductive, Maternal, Neonatal, Child and Adolescent Health**	**Level**	**Major**
Course Code	25IPHS404DS03	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To understand the health needs and challenges of reproductive, maternal, neonatal, child, and adolescent populations in India.
2. To explore the biological, social, and cultural determinants affecting reproductive, maternal, neonatal, child, and adolescent health.
3. To evaluate national and global policies and programs aimed at improving reproductive, maternal, neonatal, child, and adolescent outcomes.
4. To develop skills for planning, implementing, and monitoring reproductive, maternal, neonatal, child, and adolescent interventions.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Demonstrate an understanding of reproductive, maternal, neonatal, child, and adolescent health needs, indicators, and challenges in India.
2. Analyze the biological, social, and cultural factors influencing reproductive, maternal, neonatal, child, and adolescent health outcomes.
3. Evaluate the effectiveness of national and international reproductive, maternal, neonatal, child, and adolescent programs and policies.
4. Develop community-based interventions to address reproductive, maternal, neonatal, child, and adolescent health challenges.

Unit – I (15 h)

Unit 1: Reproductive Health

Overview of reproductive health: importance and challenges.
Family planning: methods, contraceptive technologies, and unmet needs in India.
Sexual and reproductive health rights (SRHR).
Prevention and management of reproductive tract infections (RTIs) and sexually transmitted infections (STIs), including HIV/AIDS.
National programs: Reproductive, maternal, neonatal, child, and adolescent Strategy, Mission Parivar Vikas, and reproductive health policies.

Unit – II (15h)

Unit 2: Maternal Health

Maternal health indicators: maternal mortality ratio (MMR), antenatal care (ANC), and institutional deliveries.
High-risk pregnancies and complications: anemia, pre-eclampsia, eclampsia, and postpartum hemorrhage.
Essential maternal healthcare services: antenatal, intrapartum, and postnatal care.
Policies and programs: Janani Suraksha Yojana (JSY), Janani Shishu Suraksha Karyakram (JSSK).
Role of midwives, ASHAs, and community health workers in maternal care.

Unit – III (15 h)

Unit 3: Neonatal and Child Health

Neonatal health: causes and prevention of neonatal mortality, neonatal intensive care.
Child health: undernutrition, immunization, diarrhea, and acute respiratory infections.
Integrated Management of Neonatal and Childhood Illnesses (IMNCI).
National health programs: Intensified Mission Indradhanush, Rashtriya Bal Swasthya Karyakram (RBSK).
Addressing disparities in neonatal and child health in rural and urban settings.

Unit-IV (15h)

Unit 4: Adolescent Health

Overview of adolescent health: growth, development, and challenges.
Nutritional requirements and challenges: anemia and malnutrition.
Adolescent mental health: stress, depression, and substance abuse.
Sexual and reproductive health education: menstrual hygiene, contraception, and safe practices.
National adolescent health programs: Rashtriya Kishor Swasthya Karyakram (RKSK).

Suggested Readings:

1. Park, K. (2021). Park's Textbook of Preventive and Social Medicine (26th ed.). Banarsidas Bhanot Publishers.
2. Bhutta, Z. A., Lassi, Z. S., & Blanc, A. (2015). Reproductive, Maternal, Newborn, and Child Health: Disease Control Priorities (3rd ed.). World Bank.

3. Singh, P., & Chauhan, L. S. (2017). Textbook of Community Medicine (3rd ed.). CBS Publishers & Distributors Pvt Ltd.
4. Black, R. E., Laxminarayan, R., Temmerman, M., & Walker, N. (2016). Reproductive, Maternal, Newborn, and Child Health (1st ed.). World Bank Group.
5. World Health Organization. (2017). Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors (2nd ed.). World Health Organization.
6. Sundar Rao, P. S. S., & Richard, J. (2020). An Introduction to Biostatistics and Research Methods (6th ed.). PHI Learning Pvt Ltd.
7. Gupta, M. C., & Mahajan, B. K. (2021). Textbook of Preventive and Social Medicine (5th ed.). Jaypee Brothers Medical Publishers.
8. United Nations Children's Fund (UNICEF). (2016). State of the World's Children: A Fair Chance for Every Child (1st ed.). UNICEF Publications.
9. WHO. (2018). Standards for Improving Quality of Maternal and Newborn Care in Health Facilities (1st ed.). World Health Organization.
10. Mukherjee, S. (2019). Reproductive and Child Health Care in India: Policies and Challenges (1st ed.). Concept Publishing Company.

Semester-IV

Name of the Course	Social & Behavioural Sciences	**Level**	**Major**
Course Code	25IPHS404DS04	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To understand the principles and concepts of social and behavioral sciences in public health.
2. To analyze how social, cultural, and behavioral factors influence health outcomes and disparities.
3. To explore the role of community dynamics and social support systems in shaping health behaviors.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Explain the role of social and behavioral sciences in understanding public health challenges.
2. Analyze the influence of sociocultural and behavioral factors on health outcomes and disparities.

Unit – I (15 h)

Unit 1: Introduction to Social and Behavioral Sciences in Public Health

Definitions, scope, and importance of social and behavioral sciences. Importance of social and behavioral sciences in public health.

Medical and social behavior science approaches and how behavior and social science approaches are important for public health.
Key concepts: health, illness, disease, and wellness from a sociocultural perspective.
Social determinants of health: poverty, education, gender, and caste.
Health disparities and equity in India.
Interdisciplinary approaches: sociology, psychology, and anthropology in public health.

Unit – II (15h)

Unit-2. Understanding grand theories of social and behavior sciences.
Structural and functional determinants of behaviors. Social class, social change and social control theories determining behaviors.
Psychological determinants of behaviors. Cognition, attitude and motivational theories. Looking glass self, significant other theories of social psychology
Cultural determinants of behaviors. Cultural theories of behavioral determinants.
Economic determinants of behaviors. Theories of behavioral determinants
Political economy and behaviors.

Unit – III (15 h)

Unit 3: Social Economic and Cultural Factors in Health
Influence of culture, religion, and traditions on health beliefs and practices.
Role of family, peer groups, and community in shaping health behaviors.
Social networks, social support, and their impact on health outcomes.
Gender roles and health: addressing inequities.
Case studies: addressing sociocultural barriers in public health programs in India.

Unit-IV (15h)

Unit-4. Understanding social change and behavior change
Application of theories in bringing social and cultural changes
Application of grand theories of psychology in understanding individual behavior change
For what, when and how to use social and behavior change theories.

Suggested Readings:

1. Glanz, K., Rimer, B. K., & Viswanath, K. (2015). Health Behavior and Health Education: Theory, Research, and Practice (5th ed.). Jossey-Bass.
2. Kumari, S., & Choudhury, S. (2016). Social and Behavioral Health: Indian Perspectives (1st ed.). Sage Publications India.
3. Cohen, S., & Wills, T. A. (1985). Stress, Social Support, and the Buffering Hypothesis (1st ed.). Psychological Bulletin.
4. Unger, J. B., & Perreira, K. M. (2009). Behavioral and Social Influences on Health (1st ed.). Wiley-Blackwell.
5. Glanz, K., & Bishop, D. B. (2010). The Role of Behavioral Science Theory in Health Promotion (1st ed.). Annual Review of Public Health.
6. Kaplan, R. M., & Sallis, J. F. (2007). Social and Behavioral Science in Public Health (1st ed.). Oxford University Press.
7. Rao, D. S. P. (2020). Social Determinants of Health and Public Health (1st ed.). Public Health Foundation of India.
8. World Health Organization. (2009). The World Health Report: Health Systems Financing – The Path to Universal Coverage (1st ed.). World Health Organization.
9. Hochbaum, G. M., & Rosenstock, I. M. (1958). Health Belief Model and Preventive Health Behavior (1st ed.). U.S. Department of Health, Education, and Welfare.

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Semester-V

Name of the Course	**Public Health Management**	**Level**	**Major**
Course Code	26IPHS405DS01	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To understand the principles, functions, and scope of public health management in the Indian context.
2. To develop skills in managing public health programs, including planning, organizing, and implementing interventions.
3. To explore health system organization, governance, and leadership in public health management.
4. To analyze the role of monitoring and evaluation in public health programs and policies.
5. To foster an understanding of health financing, resource management, and policy development in public health.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Describe the functions and scope of public health management and systems in India.
2. Analyze the structure and governance of India's health systems, with an emphasis on public health management.
3. Design, implement, and evaluate public health programs using appropriate management techniques.
4. Develop leadership and decision-making skills to improve public health outcomes.
5. Understand and apply health financing and policy-making concepts to real-world public health challenges.

Unit – I (15 h)

Unit 1: Introduction to Public Health Management

Public health management: definitions, scope, and importance.
Historical evolution of public health systems in India and globally.
Functions of public health management: planning, organizing, directing, and controlling.
Public health organizations in India: Ministry of Health and Family Welfare (MoHFW), National Health Mission (NHM), and state-level health authorities.
Key challenges in public health management in India: resource allocation, governance, and inequities in healthcare delivery.

Unit – II (15h)

Unit 2: Health Systems and Governance

Health systems structure: public, private, and hybrid models in India.
National Health Policy 2017: aims, objectives, and implementation challenges.
Governance in public health: roles of central, state, and local governments.
Health system performance evaluation: quality of care, accessibility, and affordability.
Public health leadership and decision-making: roles of managers, policymakers, and community leaders.

Unit – III (15 h)

Unit 3: Public Health Program Planning and Management
Overview of public health program management: design, implementation, and evaluation.
Principles of program planning: needs assessment, setting objectives, and resource allocation.
Implementation strategies: managing personnel, budget, and logistics.
Monitoring and evaluation of public health programs: types, methods, and tools.
Case studies: successful public health programs in India (e.g., Swachh Bharat Abhiyan, National TB Program, Pulse Polio Program).

Unit-IV (15h)

Unit 4: Health Financing and Policy Development
Health financing models: public and private funding, health insurance, and out-of-pocket expenses.
Budgeting for public health programs: allocation, utilization, and financial accountability.
Policy development and analysis: role of evidence in policymaking.
Global health policies and their influence on public health management in India (e.g., SDGs, Global Health Security Agenda).
Future challenges in health financing and policy in India: Universal Health Coverage (UHC) and health for all.

Suggested Readings:

1. Park, K. (2021). Park's Textbook of Preventive and Social Medicine (26th ed.). Banarsidas Bhanot Publishers.
2. Ravindra, A., & Rao, P. S. S. (2016). Principles of Public Health Management (2nd ed.). Jaypee Brothers Medical Publishers.
3. Smith, R. D., & Kessel, A. S. (2011). Health Policy and Planning: A Practical Approach (1st ed.). Oxford University Press.
4. Sharma, S. K. (2020). Public Health Management and Development (1st ed.). CBS Publishers & Distributors Pvt Ltd.
5. World Health Organization. (2016). Health Systems Strengthening: The Need for New Governance (1st ed.). World Health Organization.
6. Mills, A., & Ross, D. (2012). Health Policy and Planning: An Introduction to the World of Public Health (3rd ed.). Oxford University Press.
7. Jain, A., & Jain, A. (2015). Health Systems and Policy (1st ed.). Rupa Publications India.
8. Barker, G., Moraes, M., & Pires, A. (2016). Public Health Program Management (1st ed.). Routledge.
9. Vella, K., & Ritchie, M. (2018). Public Health Management and Leadership (1st ed.). SAGE Publications.
10. Tulloch, M., & Runnels, V. (2013). Health Systems and Development (1st ed.). McGraw-Hill Education.

Semester-V

Name of the Course	**Mental Health**	**Level**	**Major**

Course Code	26IPHS405DS02	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To understand the concepts and determinants of mental health in the Indian context.
2. To explore various mental health disorders and their social, psychological, and cultural impacts.
3. To analyze mental health policies, legislation, and services in India.
4. To develop skills for promoting mental well-being and preventing mental health issues at the community level.
5. To examine strategies for managing mental health in diverse populations, including vulnerable groups.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Describe the key concepts, determinants, and prevalence of mental health issues in India.
2. Identify and classify common mental health disorders, their symptoms, and cultural relevance.
3. Understand the mental health care systems, policies, and services available in India.
4. Design and implement community-based mental health promotion and prevention strategies.
5. Critically analyze mental health legislation, policies, and their impact on service delivery in India.

Unit – I (15 h)

Unit 1: Introduction to Mental Health

Definition and scope of mental health and mental illness.
Historical and cultural perspectives on mental health in India.
Global and national mental health statistics: prevalence and trends.
Determinants of mental health: biological, psychological, and social factors.
Mental health and public health: Importance, policies, and strategies for promotion.

Unit – II (15h)

Unit 2: Mental Health Disorders

Classification of mental health disorders: DSM-5 and ICD-11.
Common mental health disorders in India: depression, anxiety disorders, schizophrenia, and substance use disorders.
Developmental and childhood mental health disorders: autism, ADHD, and learning disabilities.
Gender and mental health: women's mental health issues and gender-based violence.
Cultural considerations in diagnosing and managing mental health disorders in India.

Unit – III (15 h)

Unit 3: Mental Health Care and Services

Overview of mental health care systems in India: Government and non-governmental services.
Role of primary health care in mental health management.
Mental health legislation and rights: The Mental Healthcare Act, 2017.
Community-based mental health care: the role of ASHAs, counselors, and social workers.
Addressing the stigma and discrimination surrounding mental health in India.

Unit-IV (15h)

Unit 4: Mental Health Promotion and Prevention

Mental health promotion strategies: awareness, education, and early intervention.
Community mental health programs: integrated mental health services in rural and urban settings.
Mental health at the workplace and school settings: promoting psychological well-being.
Crisis intervention and disaster mental health: preparedness and management.
Mental health policy and the future of mental health services in India: challenges and opportunities.

Suggested Readings:

1. Bhugra, D., & Mello, M. (2019). Textbook of Cultural Psychiatry (2nd ed.). Cambridge University Press.
2. Saxena, S., & Sharma, D. (2020). Mental Health in India: Challenges and Opportunities (1st ed.). Springer India.
3. Kaur, S., & Kumar, R. (2017). Mental Health Care in India: Challenges and Responses (1st ed.). Pearson Education India.
4. Gordon, J. R., & Zwi, A. B. (2013). Mental Health in Developing Countries (1st ed.). Oxford University Press.
5. Patel, V., & Kirkwood, B. R. (2007). Mental Health and Illness: Social, Biological, and Political Perspectives (1st ed.). Cambridge University Press.
6. Jadhav, S. (2009). Psychiatry in India: Current Concepts and Practices (1st ed.). Macmillan India.
7. WHO. (2019). Mental Health Atlas (1st ed.). World Health Organization.
8. Bhatia, M. S., & Avasarala, A. K. (2015). Clinical Manual of Psychiatry (3rd ed.). Jaypee Brothers Medical Publishers.
9. Muehlenkamp, J. J., & Andover, M. S. (2015). The Mental Health Handbook for Public Health Workers (1st ed.). Sage Publications.
10. World Health Organization. (2013). Mental Health Action Plan 2013–2020 (1st ed.). World Health Organization.

Semester-V

Name of the Course	**Vaccines, Drugs and Toxicology**	**Level**	**Major**
Course Code	26IPHS405DS03	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To understand the fundamental principles of vaccines, drugs, and toxicology in the context of public health.
2. To analyze the role of vaccines in disease prevention and control in the Indian context.
3. To explore the pharmacodynamics, pharmacokinetics, and safety profiles of drugs used in public health interventions.

4. To examine the impact of toxic substances on public health and the principles of toxicology.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Describe the principles and types of vaccines, their role in preventing diseases, and the challenges in immunization.
2. Explain the pharmacological basis of drugs used in public health, focusing on their safety and effectiveness.
3. Identify and assess the impact of toxic substances on public health, including environmental pollutants and toxins.
4. Analyze public health policies related to vaccines, drugs, and toxicology, with emphasis on India's context.

Unit – I (15 h)

Unit 1: Introduction to Vaccines and Immunization

Definition, history, and development of vaccines.
Types of vaccines: live attenuated, inactivated, subunit, toxoid, and recombinant vaccines.
Immunization schedules in India: national immunization programs (NIP), universal immunization program (UIP).
Vaccine-preventable diseases in India: polio, measles, tuberculosis, and hepatitis.
Challenges and controversies in vaccination: vaccine hesitancy, cold chain management, and ethical issues.

Unit – II (15h)

Unit 2: Drugs in Public Health

Introduction to pharmacology: pharmacodynamics, pharmacokinetics, and drug interactions.
Essential medicines and their role in public health.
Drugs for infectious diseases: antibiotics, antivirals, and antiparasitics.
Chronic disease management: drugs for hypertension, diabetes, and cardiovascular diseases.
Drug safety and adverse drug reactions: monitoring and reporting systems in India (Pharmacovigilance).

Unit – III (15 h)

Unit 3: Toxicology and Public Health

Principles of toxicology: dose-response relationship, types of toxicity, and environmental toxins.
Common environmental toxicants: pesticides, heavy metals, air pollution, and industrial chemicals.
Acute and chronic toxicity: biomarkers, methods of detection, and public health impact.
Management of poisoning and toxic exposure: clinical interventions and public health response.
Role of regulatory agencies in toxicology: Indian regulatory framework and global standards.

Unit-IV (15h)

Unit 4: Vaccines, Drugs, and Toxicology in Public Health Policy

Role of vaccines in global health policies: WHO immunization goals and initiatives.
Public health surveillance of vaccine-preventable diseases and drug use.
Pharmacoeconomics: cost-effectiveness of vaccines and drugs in public health interventions.
Risk assessment in public health: evaluating the impact of toxic substances on communities.
Future challenges in vaccines, drugs, and toxicology: emerging diseases, antibiotic resistance, and environmental risks.

Suggested Readings:

1. Gavi, S. R., & Gupta, M. (2018). Vaccines in Public Health (1st ed.). Elsevier India.
2. Orenstein, W. A., & Hinman, A. R. (2011). Vaccines (6th ed.). Saunders Elsevier.
3. Jayaraman, K., & Sagar, R. (2020). Public Health Pharmacology: Drugs and Health Systems (1st ed.). CBS Publishers & Distributors Pvt Ltd.

4. Friedman, M., & Lenke, R. (2014). Drug Safety and Public Health (1st ed.). Springer Science & Business Media.
5. Tortora, G. J., & Derrickson, B. H. (2018). Principles of Human Physiology (7th ed.). Pearson Education.
6. Balakrishnan, V. (2017). Environmental Toxicology in Public Health (1st ed.). Springer India.
7. Mayer, P., & Thompson, J. (2015). Introduction to Toxicology (4th ed.). Wiley & Sons.
8. Rao, K., & Srinivasan, V. (2016). Toxicology and Environmental Health (1st ed.). Tata McGraw-Hill Education.
9. World Health Organization. (2014). Immunization, Vaccines, and Biologicals (1st ed.). World Health Organization.
10. Kumar, M., & Chopra, K. (2019). Pharmacology and Drug Safety in Public Health (1st ed.). Oxford University Press.

Semester-V

Name of the Course	**Occupational Health**	**Level**	**Major**
Course Code	26IPHS405DS04	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To understand the fundamental principles of occupational health and its importance in public health.
2. To identify common occupational hazards, their impacts, and preventive measures in the workplace.
3. To explore occupational health policies, regulations, and safety standards in India and globally.
4. To assess and manage the health risks faced by workers in different sectors, including industrial, agricultural, and service sectors.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Explain the principles and importance of occupational health in the context of public health.
2. Identify and evaluate common occupational hazards and work-related diseases.
3. Understand the regulatory framework for occupational health in India and internationally.
4. Develop strategies for managing and mitigating health risks in the workplace.

Unit – I (15 h)

Unit 1: Introduction to Occupational Health

Definition and scope of occupational health.
Historical perspectives and development of occupational health.
Key occupational health concepts: worker's health, workplace safety, and work-related diseases.
The role of occupational health in public health.

Occupational health professionals: roles, responsibilities, and interdisciplinary collaboration.

Unit – II (15h)

Unit 2: Occupational Hazards and Health Risks

Types of occupational hazards: physical, chemical, biological, ergonomic, and psychosocial.
Common work-related diseases: respiratory diseases (e.g., asbestosis), skin diseases, musculoskeletal disorders, noise-induced hearing loss.
Exposure assessment and risk evaluation in occupational settings.
Occupational health surveillance: methods of monitoring and controlling exposures.
Impact of work-related stress and mental health issues in occupational settings.

Unit – III (15 h)

Unit 3: Occupational Health Policies and Regulations

Occupational health laws and regulations in India: Occupational Safety, Health and Working Conditions Code, 2020
National Occupational Safety and Health (NOSH) policy: implementation and challenges.
International guidelines and standards: International Labour Organization (ILO), Central Labour Institute, World Health Organization (WHO), and Occupational Safety and Health Administration (OSHA).
Role of government and regulatory bodies in occupational health management.
Workers' rights, compensation, and social protection: worker empowerment and participation in safety management.

Unit-IV (15h)

Unit 4: Occupational Health Management and Interventions

Principles of occupational health management: risk assessment, control measures, and worker education.
Preventive measures: engineering controls, administrative controls, and personal protective equipment (PPE).
Workplace wellness programs: promoting physical and mental well-being among workers.
Rehabilitation and return-to-work programs: managing workers' health after illness or injury.
Case studies: successful occupational health interventions in various industries (e.g., manufacturing, agriculture, healthcare).

Suggested Readings:

1. Gochfeld, M., & Levy, B. S. (2015). Environmental Health and Occupational Medicine (2nd ed.). Oxford University Press.
2. Goel, S. (2016). Occupational Health and Safety in India (1st ed.). Springer India.
3. Mohan, B., & Rao, P. S. (2019). Fundamentals of Occupational Health (1st ed.). Jaypee Brothers Medical Publishers.
4. Kar, S. (2018). Occupational Health and Safety: A Comprehensive Guide (1st ed.). Elsevier India.
5. Kumar, S., & Kumar, P. (2020). Occupational Health: Challenges and Approaches (1st ed.). Pearson Education India.
6. Agarwal, K. (2017). Industrial Health and Safety (1st ed.). McGraw-Hill Education.
7. Rao, K. S., & Bhat, P. (2014). Principles of Occupational Medicine (1st ed.). Elsevier Health Sciences.
8. International Labour Organization (ILO). (2019). Safe Work: A Guide to Occupational Health and Safety (1st ed.). International Labour Organization.
9. Oberholzer, J., & Durand, M. (2015). Global Occupational Health (2nd ed.). Wiley-Blackwell.
10. WHO. (2014). Occupational Health: A Public Health Perspective (1st ed.). World Health Organization.

Syllabus and Course contents in

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Semester-VI

Name of the Course	**Health Policy, Planning and Regulation**	**Level**	**Major**
Course Code	26IPHS406DS01	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To understand the key concepts of health policy, and planning, within the Indian healthcare system.
2. To analyze the processes of policy formulation, implementation, and evaluation in healthcare.
3. To explore the role of various stakeholders, including government, non-governmental organizations, and the private sector, in health policy.
4. To examine the regulatory framework governing health systems in India and globally.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Understand and describe the key concepts and components of health policy, and planning.
2. Analyze the process of health policy formulation, implementation, and evaluation within the Indian context.
3. Identify and evaluate the regulatory frameworks and legal aspects of healthcare services in India.
4. Assess the role of various stakeholders in health policy, planning, and regulation.

Unit – I (15 h)

Unit 1: Introduction to Health Policy and Planning

Definition and scope of health policy and health planning.
Evolution of health policy in India: Historical context and contemporary challenges.
Key principles of health policy and planning: equity, access, quality, and sustainability.
Health system building blocks: service delivery, financing, workforce, information systems, governance, and accountability.
The role of the government, international organizations (WHO, UNICEF), and NGOs in health policy and planning.

Unit – II (15h)

Unit 2: Health Policy Formulation and Implementation

Health policy formulation process: stakeholders, decision-making, and agenda-setting.
Health needs assessment and priority-setting: strategies and tools.
Policy implementation: frameworks, challenges, and strategies.

Monitoring and evaluation of health policies and programs.
Health policy implementation in India: National Health Mission (NHM), Ayushman Bharat, and other key policies.

Unit – III (15 h)

Unit 3: Health Policy, Planning, and Regulation

Health financing and its role in policy and planning: financing models, insurance schemes, and public-private partnerships.
Equity and access in health policy: addressing disparities in healthcare access and outcomes.
The role of technology and innovation in health policy and regulation: e-health, telemedicine, and digital health.
Future trends in health policy and regulation in India: universal health coverage, National Digital Health Mission (NDHM), and public health law reform.
Challenges in health policy implementation: political, social, economic, and organizational barriers.

Unit-IV (15h)

Unit-4 Health Policy Analysis

The analysis and Case studies on health policy implementation in India: National Health Mission (NHM), Ayushman Bharat, and other key policies.

Suggested Readings:

1. Purohit, V. (2021). Health Policy and Planning in India (1st ed.). Oxford University Press.
2. Rao, M., & Bhat, P. (2017). Health Systems and Policy in India: Challenges and Strategies (1st ed.). Springer India.
3. Ministry of Health and Family Welfare, Government of India. (2015). National Health Policy (1st ed.). Government of India.
4. Rechel, B., & Buse, K. (2016). Health Systems in Transition: An Overview of the Indian Health System (1st ed.). WHO Regional Office for Europe.
5. Glied, S., & Zivin, J. (2018). Health Economics and Policy (2nd ed.). Cengage Learning.
6. Chauhan, M., & Kumar, R. (2019). Public Health Systems and Health Policy (1st ed.). Springer India.
7. World Health Organization. (2020). Health Systems and Policy in India: Progress and Challenges (1st ed.). World Health Organization.
8. Patel, V., & Kirkwood, B. R. (2008). Global Health Policy and Governance: A Critical Review (1st ed.). Oxford University Press.
9. Tandon, A., & Berman, P. (2020). Public Health in India: Policies and Issues (1st ed.). SAGE Publications India.
10. Kruk, M. E., & Gage, A. D. (2017). Global Health Policy: A Handbook for Public Health Professionals (1st ed.). Wiley-Blackwell.

Semester-VI

Name of the Course	**Health Informatics**	**Level**	**Major**
Course Code	26IPHS406DS02	**Duration and credits**	60hrs/4 credits
Max. Marks.	100	**Workload**	4 Hours/week

	(70 marks for External Exam + 30 marks for Internal Evaluation)		

Course Objectives

1. To understand the basic concepts, tools, and applications of health informatics in public health.
2. To explore the role of information technology in healthcare delivery and management.
3. To analyze the use of electronic health records (EHR), health information systems, and data analytics in improving health outcomes.
4. To understand the importance of health data security, privacy, and ethical considerations in health informatics.
5. To examine current trends in health informatics, such as telemedicine, digital health, and health data exchange.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Explain the basic principles and applications of health informatics in healthcare.
2. Understand the functioning of health information systems (HIS) and electronic health records (EHR).
3. Analyze health data using basic analytics and interpret the results for public health decision-making.
4. Identify and address privacy, security, and ethical issues in managing health data.
5. Evaluate current trends in health informatics, such as telemedicine, mobile health, and digital health.

Unit – I (15 h)

Unit 1: Introduction to Health Informatics

Definition, scope, and evolution of health informatics.
Key concepts: electronic health records (EHR), health information systems (HIS), telemedicine, and digital health.
The role of health informatics in improving healthcare delivery, efficiency, and decision-making.
Basic components of health informatics systems: data, hardware, software, people, and processes.
Overview of healthcare data standards: ICD-10, SNOMED, HL7, and LOINC.

Unit – II (15h)

Unit 2: Health Information Systems (HIS) and Electronic Health Records (EHR)

Introduction to health information systems (HIS): types, components, and functionality.
Overview of electronic health records (EHR): benefits, challenges, and implementation.
Interoperability and standardization in EHR systems.
Health data storage, retrieval, and exchange: cloud computing, databases, and integration platforms.
Case studies on successful EHR implementations in India and globally.

Unit – III (15 h)

Unit 3: Health Data Management and Analytics

Principles of health data management: data collection, processing, storage, and retrieval.
Health data analytics: types (descriptive, predictive, prescriptive), methods, and applications.
Use of health informatics for epidemiology, disease surveillance, and decision-making.
Big data and artificial intelligence (AI) in health informatics: challenges, opportunities, and applications.
Data quality, validation, and cleaning processes for health data analysis.

Unit-IV (15h)

Unit 4: Privacy, Security, and Ethical Issues in Health Informatics

Privacy and security challenges in health data management: HIPAA, GDPR, and other regulations.
Health informatics ethics: consent, confidentiality, and data protection.
Legal and regulatory frameworks for health data: India's Digital Health Laws, National Health Policy, and the Digital Information Security in Healthcare Act (DISHA).
The role of public health professionals in managing health data privacy and security.
Emerging trends in health informatics: telemedicine, mobile health (mHealth), and health information exchanges (HIEs).

Suggested Readings:

1. Hersh, W. (2018). Health Informatics: Practical Guide for Healthcare and Information Technology Professionals (7th ed.). Informatics Education.
2. Koch, S., & Schreiber, R. (2017). Health Informatics: An Interprofessional Approach (1st ed.). Elsevier.
3. Buntin, M. B., & Burke, M. F. (2016). Health Information Management: Concepts, Principles, and Practice (2nd ed.). AHIMA.
4. Raghupathi, W. (2020). Data Analytics in Healthcare: A Comprehensive Guide (1st ed.). Springer.
5. Mantas, J., & Hasman, A. (2018). Health Informatics: An Overview (3rd ed.). Springer.
6. Rajendran, S. (2019). Health Informatics: A Practical Approach for Health Professionals (1st ed.). Pearson Education India.
7. Marina, R., & Sadr, S. (2021). Healthcare Information Systems: A Practical Guide for Health Informatics (2nd ed.). Wiley.
8. Mays, T., & O'Neill, M. (2016). Health Information Technology in the Cloud (1st ed.). Springer.
9. Smith, S. (2019). Introduction to Health Informatics (2nd ed.). Oxford University Press.
10. Sundeep Sahay and T. Sunderaraman. Public health informatics: Designing for Change - A Developing Country Perspective by Oxford Press.

Semester-VI

Name of the Course	Health Economics and Financing	**Level**	**Major**
Course Code	26IPHS406DS03	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To introduce the fundamental concepts and principles of health economics and financing in public health.
2. To understand the relationship between health policy, economics, and public health outcomes.
3. To explore different methods of financing healthcare, including insurance models, government funding, and out-of-pocket expenditures.

4. To analyze the economic evaluation of health interventions and programs in the context of resource allocation.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Understand the basic principles of health economics and their relevance to public health policy and practice.
2. Identify and compare different healthcare financing models and systems, including those used in India.
3. Conduct economic evaluations of healthcare interventions using appropriate methods.
4. Analyze the impact of economic policies on healthcare delivery and access in both global and Indian contexts.

Unit – I (15 h)

Unit 1: Introduction to Health Economics

Basic concepts of economics: scarcity, choice, and opportunity cost in healthcare.
The economics of healthcare systems: efficiency, equity, and sustainability.
The role of government in healthcare: public goods, market failure, and government intervention.
Demand and supply in healthcare: factors influencing healthcare demand, elasticity, and price sensitivity.
Health as a commodity: the role of the private sector in health delivery.

Unit – II (15h)

Unit 2: Healthcare Financing Models

Overview of healthcare financing: types of systems (Bismarck, Beveridge, National Health Insurance, out-of-pocket).
Public vs private financing: equity, access, and efficiency.
Role of health insurance: types (private, social health insurance, government-funded schemes), models, and implementation challenges.
Health financing in India: the role of government (Ayushman Bharat, National Health Mission) and private sector financing.
The challenges of financing healthcare in low and middle-income countries (LMICs): sustainability, resource mobilization, and equity.

Unit – III (15 h)

Unit 3: Economic Evaluation in Health

Methods of economic evaluation: Cost-effectiveness analysis (CEA), cost-utility analysis (CUA), and cost-benefit analysis (CBA).
Health Technology Assessment (HTA).
Measuring health outcomes: Quality-adjusted life years (QALYs) and disability-adjusted life years (DALYs).
The role of economic evaluation in decision-making: healthcare priority-setting and resource allocation.
Public health interventions and their cost-effectiveness: evaluating vaccination programs, maternal health, and chronic disease interventions.
Real-world examples and case studies of economic evaluation in India and globally.

Unit-IV (15h)

Unit 4: Health Policy, Economics, and Reform

Role of economics in health policy-making and planning.
Policy reforms in healthcare financing: reforms in India (National Health Policy 2017, Ayushman Bharat).
Healthcare expenditure and sustainability: public health expenditure trends in India.
Universal health coverage (UHC): economic perspectives and the Indian experience.
Global health economics: trends in global health financing, the role of international organizations (WHO, World Bank).

Suggested Readings:

1. Drèze, J., & Sen, A. (2013). An Uncertain Glory: India and Its Contradictions (1st ed.). Princeton University Press.
2. Jha, R. (2020). Health Economics in India (1st ed.). SAGE Publications India.
3. Kutzin, J. (2013). Health Financing for Universal Coverage: Concepts and Implications (1st ed.). World Health Organization.
4. Frenk, J., & González-Pier, E. (2012). Health Systems Reform in Mexico: A Critical Evaluation (1st ed.). Oxford University Press.
5. Brugha, R., & Varvasovszky, Z. (2000). Stakeholder Analysis: A Review (1st ed.). Health Policy and Planning, 15(3).
6. Culyer, A. J., & Newhouse, J. P. (2000). Handbook of Health Economics (1st ed.). Elsevier.
7. Wagstaff, A., & Yu, S. (2007). Health Financing and Health Outcomes: The Case of India (1st ed.). World Bank.
8. Cutler, D. M., & Richardson, E. (2020). The Economics of Health and Health Care (8th ed.). Pearson Education.
9. Rao, M., & Berman, P. (2016). Public Health System and Policy in India (1st ed.). Springer India.
10. Leu, R. E., & Schneider, M. (2008). The Economics of Health and Health Care: A Global Perspective (2nd ed.). Springer.

Semester-VI

Name of the Course	**Basics of Public Health Research**	**Level**	**Major**
Course Code	26IPHS406DS04	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To introduce students to the fundamental concepts, principles, and methods used in public health research.
2. To understand the role of research in public health practice and policymaking.
3. To familiarize students with the various study designs and research methods used in public health research.
4. To enhance the ability of students to critically evaluate public health research and literature.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Understand and apply the fundamental concepts, principles, and methods of public health research.
2. Identify and differentiate various study designs and select appropriate designs for specific public health research questions.

3. Demonstrate competence in data collection techniques, including designing surveys and conducting interviews.
4. Analyze public health data using basic statistical techniques and interpret research findings.

Unit – I (15 h)

Unit 1: Introduction to Public Health Research

Science: Basic elements of Theory and methods

Definition, scope, and significance of public health research.

Types of research in public health: basic, applied, formative, evaluative, and policy research.

Steps in the research process: problem identification, literature review, research questions, hypothesis formation, and research objectives.

Research ethics in public health: ethical principles, informed consent, confidentiality, and institutional review boards (IRB).

Review of key public health issues and the need for research: communicable diseases, non-communicable diseases, environmental health, and social determinants of health.

Unit – II (15h)

Unit 2: Study Designs in Public Health Research

Approached of Public Health Research: Quantitative, Qualitative, and Mixed Method

Experimental research: randomized controlled trials (RCTs), clinical trials, and community interventions.

Observational research: cohort studies, case-control studies, cross-sectional studies, and ecological studies.

Qualitative Research Strategies and Designs: Phenomenology, Ethnography, Grounded Theory, Case Study, Historical.

Mixed methods research designs: Concurrent and Sequential, Explanatory and Exploratory.

Unit – III (15 h)

Unit 3: Data Collection and Analysis in Public Health Research

Types of data: qualitative vs. quantitative data.

Tools for data collection: surveys, questionnaires, interviews, focus groups, and field observations methods such as focus group discussions (FGDs), in-depth interviews, and case studies.

Sampling methods: probability sampling, non-probability sampling, and sample size determination for quantitative and qualitative studies.

Data analysis methods- QUANT: descriptive statistics, inferential statistics, and basic statistical software (e.g., R); QUAL: Framework, Thematic, Discourse, Narrative and software (e.g. Atlas ti)

Interpreting research findings: QUANT- understanding statistical significance, p-values, confidence intervals, and effect size. QUAL- Themes, Categories, Patterns

Unit-IV (15h)

Unit 4: Research Communication and Application

Writing a research proposal: components, objectives, methodology, and budget.

Writing and publishing a research paper: structure, peer review, and common pitfalls.

Presenting research findings: oral presentations, posters, and effective communication strategies.

Policy application of research: how research informs public health policy and practice.

Dissemination and knowledge translation: strategies to ensure research findings reach relevant stakeholders (e.g., policymakers, public health professionals, and the community).

Suggested Readings:

1. Green, L. W., & Mercer, S. L. (2012). Community-based Participatory Research for Health: Advancing Social and Health Equity (2nd ed.). Jossey-Bass.
2. Rao, M. (2017). Research Methodology for Public Health: Concepts and Applications (1st ed.). SAGE Publications India.

3. Kumar, R. (2019). Research Methodology: A Step-by-Step Guide for Beginners (4th ed.). SAGE Publications.
4. Bhatia, J. (2018). Public Health Research Methods (1st ed.). Pearson Education India.
5. Kothari, C. R. (2019). Research Methodology: Methods and Techniques (4th ed.). New Age International.
6. Bailey, K. D. (2008). Methods of Social Research (4th ed.). Free Press.
7. Sharma, S. (2017). Research Methods in Public Health (1st ed.). Cambridge University Press.
8. Mertens, D. M. (2014). Research and Evaluation in Education and Psychology: Integrating Diversity with Quantitative, Qualitative, and Mixed Methods (4th ed.). SAGE Publications.
9. MacQueen, K. M., et al. (2008). Manual for Analysis of Qualitative Data (1st ed.). SAGE Publications.
10. Jekel, J. F., et al. (2014). Epidemiology, Biostatistics, and Preventive Medicine (4th ed.). Elsevier Health Sciences.

Syllabus and Course contents in

Bachelor in Public Health Sciences (BPHS)

Semester-VII

Name of the Course	**Health Geography and International Health**	**Level**	**Major**
Course Code	27IPHH407DS01	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To introduce students to the concepts of health geography and its significance in understanding the spatial distribution of health and disease.
2. To analyze the role of environmental, social, and economic factors in shaping global health patterns.
3. To examine the principles and practice of global health and its implications for public health in different regions.
4. To explore the relationship between health systems, policy, and geography in the global context, particularly in low- and middle-income countries.
5. To develop an understanding of the challenges in global health, including infectious diseases, non-communicable diseases, and health disparities, and the role of international organizations in addressing these issues.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Understand the principles of health geography and its role in understanding the spatial patterns of health and disease.
2. Analyze the factors influencing global health disparities and apply this knowledge in public health planning.
3. Assess the effectiveness of health systems globally and understand their relationship with geography.
4. Examine the global distribution and determinants of both infectious and non-communicable diseases.
5. Critically evaluate the role of international organizations and policies in addressing global health issues.

Unit – I (15 h)

Unit 1: Introduction to Health Geography

Definition and scope of health geography.
Relationship between geography and health: spatial distribution of diseases and health outcomes.
Geographic information systems (GIS) and their application in health geography.
Environmental factors affecting health: climate, pollution, water, and sanitation.
Social and economic determinants of health: poverty, education, and access to healthcare services.

Unit – II (15h)

Unit 2: Global Health Systems and Policy

Overview of health systems globally: Organization of health systems, financing, and governance.
Healthcare access and equity in different regions: comparing high-income and low-income countries.
Global health policy: Health in all policies, international treaties, and collaborations.
Role of international organizations: WHO, UN, World Bank, and non-governmental organizations (NGOs) in global health governance.
Health diplomacy: addressing political, cultural, and economic challenges in global health.

Unit – III (15 h)

Unit 3: Disease Geography and Global Health

Infectious diseases and their global distribution: malaria, tuberculosis, HIV/AIDS, and emerging diseases.
Non-communicable diseases (NCDs) in the global context: cardiovascular diseases, diabetes, and cancer.
Environmental health and the impact of climate change on global health.
Health and development: the interrelationship between socioeconomic development, urbanization, and disease patterns.
Health disparities: Understanding the social determinants of health and their spatial distribution globally.

Unit-IV (15h)

Unit 4: Contemporary Issues in Global Health

Health inequities: Causes and solutions to health disparities in the global context.
Globalization and health: impacts of trade, migration, and technology on health outcomes.
Humanitarian health crises: response to conflict, natural disasters, and refugee health.
Health interventions and programs: Global health initiatives like vaccination programs, maternal health, and water sanitation.
Future of global health: Emerging challenges such as climate change, aging populations, and pandemics.

Suggested Readings:

1. Hancock, T., & Edwards, R. (2008). Health and Place: A European Perspective (1st ed.). Routledge.
2. Kjellstrom, T., & Corvalan, C. (2015). Climate Change and Public Health: A Global Perspective (1st ed.). Springer.
3. Joffe, H., & McNeill, K. (2010). Health Geography: Theories, Concepts, and Methods (1st ed.). Wiley-Blackwell.
4. Phillips, D. (2015). Global Health and Global Health Policy (2nd ed.). Routledge.
5. Rivard, A. (2011). International Health: A Global Perspective (1st ed.). Springer.
6. Pillai, V., & Sharma, S. (2017). Global Health: A Health Systems Perspective (1st ed.). SAGE Publications India.
7. Moon, S., & Sclafani, M. (2013). Global Health Governance: A Conceptual Framework (1st ed.). Palgrave Macmillan.
8. Elliott, S. J., & Rojas, D. (2012). Geographies of Health: An Introduction (1st ed.). Wiley-Blackwell.
9. Marmot, M., & Wilkinson, R. (2006). Social Determinants of Health (2nd ed.). Oxford University Press.
10. Robin Haring (2021) Handbook of Global Health by Springer.

Semester-VII

Name of the Course	**Health Promotion: Approaches, Methods and Evaluation**	**Level**	**Major**
Course Code	27IPHH407DS02	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation))	**Workload**	4 Hours/week

Course Objectives

1. To introduce students to the fundamental concepts and principles of health promotion, its significance, and its role in public health.
2. To explore various health promotion models, theories, and approaches in different settings and contexts.
3. To develop skills for planning and implementing effective health promotion programs.
4. To provide students with methods for evaluating the effectiveness of health promotion interventions.
5. To enhance students' ability to design, evaluate, and sustain health promotion activities within the Indian context.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Understand the core principles and concepts of health promotion and its role in public health.
2. Apply various health promotion theories and models to design and implement effective health promotion interventions.
3. Develop health promotion strategies and programs suitable for different settings.

4. Plan and conduct evaluations of health promotion interventions using appropriate methodologies.
5. Analyze and interpret data from health promotion evaluations to improve program outcomes.

Unit – I (15 h)

Unit 1: Introduction to Health Promotion

Definition, principles, and scope of health promotion.
History and evolution of health promotion: Ottawa Charter for Health Promotion and key global frameworks.
The role of health promotion in preventing diseases and promoting well-being.
The socio-ecological model in health promotion: individual, community, and societal levels.
Health promotion settings: schools, workplaces, communities, and healthcare settings.

Unit – II (15h)

Unit 2: Health Promotion Theories and Models

Health belief model and theory of planned behavior.
Social cognitive theory and its applications in health promotion.
Transtheoretical model (Stages of Change) and diffusion of innovations.
Ecological and community-based approaches to health promotion.
Participatory approaches and empowerment in health promotion.

Unit – III (15 h)

Unit 3: Health Promotion Methods and Strategies

Approaches to health communication: interpersonal, group-based, and mass media strategies.
Education and training methods: workshops, seminars, and health literacy programs.
Social marketing: principles, planning, and strategies for behavior change.
Community mobilization and advocacy: capacity-building and policy influence.
Multi-level approaches: integrated strategies involving individuals, communities, and policy.

Unit-IV (15h)

Unit 4: Health Promotion Evaluation

Definition and importance of program evaluation in health promotion.
Types of evaluation: formative, process, impact, and outcome evaluations.
Evaluation designs: qualitative and quantitative methods, mixed methods.
Data collection methods for evaluation: surveys, focus groups, interviews, and observational studies.
Challenges in evaluating health promotion programs and sustainability considerations.

Suggested Readings:

1. Naidoo, J., & Wills, J. (2016). Foundations for Health Promotion (4th ed.). Elsevier Health Sciences.
2. Green, L. W., & Kreuter, M. W. (2005). Health Promotion Planning: An Educational and Environmental Approach (4th ed.). McGraw-Hill.
3. Nutbeam, D., & Harris, E. (2010). Theory in a Nutshell: A Guide to Health Promotion Theory (2nd ed.). McGraw-Hill Education.
4. Cockerham, W. C. (2013). Medical Sociology (12th ed.). Pearson Education.
5. Hawkins, B., & Gill, M. (2012). Health Promotion: A Critical Perspective (1st ed.). SAGE Publications.
6. McKenzie, J. F., Neiger, B. L., & Thackeray, R. (2016). Planning, Implementing, and Evaluating Health Promotion Programs (7th ed.). Pearson Education.
7. Laverack, G. (2013). Public Health: Power, Empowerment and Professional Practice (1st ed.). Palgrave Macmillan.
8. Tones, K., & Green, J. (2014). Health Promotion: Planning and Strategies (3rd ed.). SAGE Publications.

9. Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social Learning Theory and the Health Belief Model: An Integrated Approach to Health Behavior Change. Health Education & Behavior.
10. Minkler, M., & Wallerstein, N. (2008). Community-Based Participatory Research for Health: From Process to Outcomes (2nd ed.). Jossey-Bass.

Semester-VII

Name of the Course	**Roles and responsibilities of NGO's, CBOs, iNGOs**	**Level**	**Major**
Course Code	27IPHH407DS03	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To introduce students to the roles and responsibilities of Non-Governmental Organizations (NGOs), Community-Based Organizations (CBOs), and International Non-Governmental Organizations (iNGOs) in public health and development.
2. To understand the legal, ethical, and operational frameworks governing NGOs, CBOs, and iNGOs in India and globally.
3. To explore the contributions of these organizations to health, education, sanitation, and social welfare programs in underprivileged and rural communities.
4. To examine the collaboration between governments, NGOs, CBOs, iNGOs, and international agencies in addressing health and development challenges.
5. To develop skills in assessing and managing NGO and CBO programs, including monitoring and evaluation techniques.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Understand the roles and responsibilities of NGOs, CBOs, and iNGOs in addressing health and development challenges.
2. Evaluate the legal and ethical framework governing NGOs, CBOs, and iNGOs, particularly in the Indian context.
3. Apply knowledge of organizational structures and functions to manage and assess NGO and CBO programs effectively.
4. Analyze the impact of iNGOs and their collaboration with governments and international bodies in global health interventions.
5. Develop skills in evaluating the effectiveness of community-based programs and in formulating strategies for NGO sustainability and growth.

Unit – I (15 h)

Unit 1: Introduction to NGOs, CBOs, and iNGOs

Definition, types, and classification of NGOs, CBOs, and iNGOs.
History and evolution of NGOs in India and globally.
Legal and regulatory framework governing NGOs, CBOs, and iNGOs in India: FCRA, Registration of Societies Act, Income Tax Act, and other regulations.

Role and significance of NGOs, CBOs, and iNGOs in addressing social and health disparities.
Relationship between NGOs, government, and private sector in health and development.

Unit – II (15h)

Unit 2: Key Roles and Responsibilities of NGOs and CBOs

Role of NGOs in community development: health, education, water, sanitation, and livelihood.
CBOs and their focus on community-driven development: grassroots-level interventions.
Advocacy, awareness, and policy influence: NGOs' role in social justice and health equity.
Organizational structures and functions: governance, management, and accountability.
Social impact of NGOs and CBOs: case studies of successful public health interventions.

Unit – III (15 h)

Unit 3: Role of iNGOs in Global Health and Development

Overview of iNGOs: Structure, function, and global reach.
Key areas of work: Health programs, disaster relief, conflict resolution, and humanitarian aid.
iNGOs in India: Contribution and challenges in public health interventions.
Collaboration with UN agencies (WHO, UNICEF, UNDP) and other international bodies.
Funding mechanisms and resource mobilization: Ethical considerations and transparency.

Unit-IV (15h)

Unit 4: Challenges and Opportunities in NGO and CBO Operations

Funding challenges and dependency: Diversification of funding sources and donor relations.
Capacity building and skill development within NGOs and CBOs.
Monitoring and evaluation of NGO programs: tools, methodologies, and ethical concerns.
Collaboration and partnerships: Government-NGO partnerships for health and development programs.
Ethical issues: Transparency, accountability, and sustainability in NGO and CBO operations.

Suggested Readings:

1. Sadan, M. (2012). Non-Governmental Organizations in India: A Profile (1st ed.). SAGE Publications India.
2. Lewis, D., & Kanji, N. (2009). Non-Governmental Organizations and Development (2nd ed.). Routledge.
3. Bakker, E. (2000). NGOs and Development: A Critical Perspective (1st ed.). Palgrave Macmillan.
4. Scholte, J. A. (2007). International NGOs and Development: The Role of International Non-Governmental Organizations in Development (1st ed.). Routledge.
5. Loh, P. (2006). Managing NGOs in Developing Countries: A Practical Approach (1st ed.). Routledge.
6. Prakash, A., & Gugerty, M. K. (2010). The Role of NGOs in Development: A Comparative Perspective (1st ed.). Cambridge University Press.
7. Lasker, R. D., & Weiss, E. S. (2003). Public Health: Partnership for Health Equity (1st ed.). Oxford University Press.
8. Hulme, D., & Edwards, M. (2013). NGOs, States, and Donors: Too Close for Comfort? (1st ed.). Macmillan.
9. Zadek, S., & Al., P. (2002). NGO Accountability: Politics, Principles and Innovations (1st ed.). Earthscan.
10. Bebbington, A., & Riddell, R. (2003). NGOs and Development (1st ed.). Oxford University Press.

Semester-VII

Name of the Course	Laws, Acts, and Ethics in Public Health	**Level**	**Major**
Course Code	27IPHH407DS04	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To familiarize students with key public health laws and acts in India and globally.
2. To understand the role of legal frameworks in ensuring health equity and access to healthcare.
3. To examine ethical issues in public health practice, including research ethics and health policy formulation.
4. To critically evaluate the relationship between law, ethics, and public health outcomes.
5. To develop an understanding of health rights, responsibilities, and the ethical challenges that arise in public health policy and practice.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Understand and apply key laws and acts related to public health in India and globally.
2. Critically evaluate public health laws in the context of ethical decision-making and health equity.
3. Recognize and analyze ethical issues in public health research, policy formulation, and practice.
4. Develop an understanding of the relationship between health laws, human rights, and ethical principles in public health.
5. Analyze real-world ethical dilemmas and propose ethical solutions in public health practice.

Unit – I (15 h)

Unit 1: Introduction to Public Health Laws and Acts

Overview of Public Health Law: Definition, scope, and importance in India and globally.
Constitutional provisions related to public health in India: Fundamental Rights and Directive Principles of State Policy.
The Indian Public Health Act (1897) and its significance in controlling diseases.
The Epidemic Diseases Act (1897): Objectives, provisions, and application in controlling epidemics in India.
The National Health Policy (2017): A framework for health systems strengthening in India.

Unit – II (15h)

Unit 2: Key Public Health Laws and Regulations in India

The Food Safety and Standards Act (2006) and its impact on food safety and nutrition.
The Drugs and Cosmetics Act (1940): Regulatory frameworks for pharmaceutical practices in India.
The Environment Protection Act (1986): Environmental health laws in India and their impact on public health.
The Mental Healthcare Act (2017): Legal provisions related to mental health in India.
The Tobacco Control Laws (COTPA 2003): Role in controlling tobacco use and protecting public health.

Unit – III (15 h)
Unit 3: Health Rights, Ethics, and Human Rights in Public Health Health as a human right: International frameworks (UN Declaration of Human Rights, International Covenant on Economic, Social, and Cultural Rights). Ethical principles in public health: Beneficence, non-maleficence, autonomy, justice, and respect for persons. The role of bioethics in public health research and practice. Confidentiality, informed consent, and patient autonomy in public health interventions. Case studies on ethical dilemmas in public health: Forced vaccinations, quarantine, and resource allocation.
Unit-IV (15h)
Unit 4: Ethical Issues in Public Health Practice and Policy Public health ethics and the balance between individual rights and community health. Ethical considerations in health surveillance and data collection. Addressing health disparities and inequities through ethical policymaking. Legal and ethical issues in global health: Ethical frameworks in international public health interventions. The role of public health professionals in advocating for ethical public health policies.
Suggested Readings: 1. Berman, P., & Reddy, S. (2011). India Health Systems Review (1st ed.). WHO Regional Office for South-East Asia. 2. Tata Institute of Social Sciences (2016). Public Health Ethics: Global Perspectives (1st ed.). SAGE Publications India. 3. Saksena, R. (2015). Public Health Laws and Ethics in India (1st ed.). Oxford University Press. 4. Goel, S. L., & Jain, M. (2010). Public Health Law and Ethics (1st ed.). Deep & Deep Publications. 5. Sharma, P. (2016). Legal Aspects of Public Health in India (1st ed.). Legal Publishing House. 6. Faden, R. R., & Beauchamp, T. L. (2018). A History and Theory of Informed Consent (2nd ed.). Oxford University Press. 7. Gostin, L. O., & Powers, M. (2007). Public Health Law: Power, Duty, Restraint (2nd ed.). University of California Press. 8. Pereira, M. E. (2014). Health Law and Ethics (1st ed.). Wolters Kluwer India Pvt. Ltd. 9. Kass, N. E., & Largent, E. A. (2010). The Ethics of Public Health Research (1st ed.). Oxford University Press. 10. Patel, V., & Saraceno, B. (2011). Mental Health and Human Rights: A Global Perspective (1st ed.). Cambridge University Press.

Semester-VII

Name of the Course	**Social and Behavioral change communication (SBCC)**	**Level**	**Major**
Course Code	27IPHH407DS05	**Duration and credits**	60hrs/4 credits
Max. Marks.	100	**Workload**	4 Hours/week

	(70 marks for External Exam + 30 marks for Internal Evaluation)		

Course Objectives

1. To provide students with an understanding of the theories and models of communication, especially in the context of social and behavioral change.
2. To explore the role of communication in influencing health behaviors and addressing public health challenges.
3. To equip students with knowledge and skills to design, implement, and evaluate communication strategies for social and behavioral change.
4. To understand the significance of culture, context, and community in developing effective communication strategies.
5. To analyze real-world examples of communication campaigns in public health and examine their effectiveness.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Understand and apply key theories and models of communication relevant to public health and behavior change.
2. Design effective SBCC programs tailored to the needs of specific populations and health issues.
3. Implement communication strategies that engage communities and stakeholders in the behavior change process.
4. Assess the impact of SBCC programs using appropriate monitoring and evaluation techniques.
5. Critically analyze real-world examples of SBCC campaigns and develop recommendations for improving their effectiveness.

Unit – I (15 h)

Unit 1: Introduction to Social and Behavioral Change Communication (SBCC)

Definition and scope of SBCC in public health.
Historical perspective of communication in public health.
Theories and models of communication: Health Belief Model, Social Cognitive Theory, Theory of Planned Behavior, and Diffusion of Innovations.
Key principles of behavior change: Motivation, persuasion, and cognitive factors.
Role of media, interpersonal communication, and community mobilization in behavior change.

Unit – II (15h)

Unit 2: Designing SBCC Programs

Steps in designing SBCC programs: Needs assessment, target audience, message development, and strategy selection.
Cultural, social, and contextual considerations in SBCC.
Communication tools and channels: Mass media, social media, community-based approaches, and digital communication.
Engaging stakeholders: Role of government, NGOs, community leaders, and influencers.
Case studies of successful SBCC programs in public health: Examples from India and globally.

Unit – III (15 h)

Unit 3: Implementing SBCC Strategies

Approaches for implementing SBCC programs: Top-down vs. bottom-up approaches.
Role of community-based interventions and participatory communication in behavior change.
Training and capacity building for effective communication in public health programs.
Overcoming barriers to communication: Cultural, linguistic, and literacy challenges.
Social marketing in SBCC: Concepts, techniques, and ethical considerations.

Unit-IV (15h)
Unit 4: Monitoring, Evaluation, and Impact Assessment of SBCC Programs Monitoring and evaluation frameworks for SBCC programs: Tools, indicators, and processes. Measuring the effectiveness of SBCC: Behavioral, cognitive, and attitudinal outcomes. Feedback mechanisms and adaptive strategies in SBCC. Ethical considerations in monitoring and evaluating behavior change. Lessons learned from previous SBCC campaigns: Challenges, successes, and recommendations for future programs.
Suggested Readings: 1. Singh, R., & Sharma, R. (2016). Health Communication in Public Health (1st ed.). SAGE Publications India. 2. Rogers, E. M., & Storey, D. (2003). Communication Campaigns and Social Change (2nd ed.). SAGE Publications. 3. Maibach, E., & Parrott, R. (1995). Designing Health Messages: Approaches from Communication Theory and Public Health Practice (1st ed.). SAGE Publications. 4. Laskar, R. (2017). Social and Behavioral Change Communication: A Guide for Health Professionals (1st ed.). Orient Black Swan. 5. Parker, R., & Haas, S. (2015). Health Communication: A Social and Behavioral Perspective (2nd ed.). Routledge. 6. Campbell, C., & Tushman, M. L. (2009). Community Health Communication (1st ed.). Pearson Education India. 7. McQuail, D. (2010). Mass Communication Theory (6th ed.). SAGE Publications. 8. Jones, R. S., & McQueen, D. (2011). Health Promotion: Planning and Strategies (3rd ed.). Open University Press.

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Semester-VIII

Name of the Course	**Design and Methods of Health Surveys**	**Level**	**Major**
Course Code	27IPHH408DS01	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week
Course Objectives 1. To introduce students to the basic principles and methods of designing health surveys. 2. To familiarize students with the different types of health surveys used in public health research. 3. To develop skills in designing surveys, including sample size estimation and sampling methods, data collection tools, and data management.			

4. To understand the ethical issues and challenges involved in health survey design and implementation.
5. To enable students to critically evaluate health surveys and interpret their findings in the context of public health practice.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Design and implement health surveys, including sample size estimation, sampling and data collection methods.
2. Apply appropriate survey methodology and tools in different public health contexts.
3. Analyze and interpret data from health surveys using statistical techniques.
4. Evaluate the strengths and limitations of various survey designs in public health research.
5. Understand the ethical considerations involved in health surveys and ensure compliance with ethical standards.

Unit – I (15 h)

Unit 1: Introduction to Health Surveys

Overview of health surveys: Purpose, importance, and types (cross-sectional, longitudinal, cohort, case-control).
Survey design: Defining the problem, formulating hypotheses, and setting objectives.
Sampling techniques: Probability and non-probability sampling, sample size calculations.
Data collection methods: Questionnaires, interviews, focus groups, and observations.
Introduction to survey planning: Timeline, budget, and resource allocation.

Unit – II (15h)

Unit 2: Survey Methodology and Tools

Designing data collection tools: Questionnaires, interview schedules, and data coding.
Validity and reliability in survey instruments: Types of validity, methods to ensure reliability.
Pretesting and piloting surveys: Importance, strategies, and challenges.
Ethical issues in health surveys: Informed consent, confidentiality, and cultural sensitivity.
Use of digital tools and software in survey data collection and management.

Unit – III (15 h)

Unit 3: Data Collection and Analysis in Health Surveys

Organizing and managing survey data: Data entry, cleaning, and coding.
Analyzing survey data: Descriptive statistics, inferential statistics, and hypothesis testing.
Challenges in data analysis: Missing data, biases, and confounding factors.
Data interpretation and presentation: Tables, charts, and graphs.
Reporting survey findings: Writing reports, executive summaries, and policy briefs.

Unit-IV (15h)

Unit 4: Advanced Topics in Health Surveys

Health surveillance and continuous monitoring surveys: Techniques and applications.
Longitudinal surveys: Design, challenges, and data analysis.
Surveys in vulnerable populations: Designing inclusive surveys for marginalized groups.
Evaluation of health surveys: Criteria for assessing survey quality and impact.
Case studies: Review of successful health surveys and their outcomes.

Suggested Readings:

1. Aday, L. A., & Cornelius, L. J. (2006). Designing and Conducting Health Surveys: A Comprehensive Guide (3rd ed.). Jossey-Bass.
2. Moser, C. A., & Kalton, G. (2017). Survey Methods in Social Investigation (3rd ed.). Routledge.
3. Fowler, F. J. (2013). Survey Research Methods (5th ed.). SAGE Publications.

4. Biemer, P. P., & Lyberg, L. E. (2003). Introduction to Survey Quality (1st ed.). Wiley-Interscience.
5. Teddlie, C., & Tashakkori, A. (2009). Foundations of Mixed Methods Research: Integrating Quantitative and Qualitative Approaches in the Social and Behavioral Sciences (1st ed.). SAGE Publications.
6. Kish, L. (1995). Survey Sampling (2nd ed.). Wiley.
7. Kumar, R. (2014). Research Methodology: A Step-by-Step Guide for Beginners (4th ed.). SAGE Publications India.
8. Kreuter, F., & Wolter, K. M. (2012). Sampling in Social Research: Techniques and Issues (1st ed.). Routledge.
9. Groves, R. M., & Couper, M. P. (1998). Nonresponse in Household Surveys (1st ed.). Wiley.
10. Schneider, M. C., & Yamada, M. (2016). Health Surveys: A Guide for Researchers and Practitioners (1st ed.). Oxford University Press.

Semester-VIII

Name of the Course	**Health Mapping and GIS application in health**	**Level**	**Major**
Course Code	27IPHH408DS02	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To introduce students to the concepts and applications of Geographic Information Systems (GIS) in public health.
2. To develop skills in mapping and spatial analysis for addressing public health issues.
3. To understand the use of GIS tools in health surveillance, disease mapping, and environmental health.
4. To explore the relationship between health data and geographic factors in health outcomes.
5. To enable students to design, analyze, and interpret health maps for decision-making and policy formulation.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Understand the principles and concepts of GIS and its role in public health.
2. Apply GIS tools and techniques for health data collection, mapping, and analysis.
3. Analyze spatial data to identify patterns and trends in health outcomes.
4. Evaluate the use of GIS in health surveillance, disease prevention, and environmental health.
5. Interpret and communicate health data effectively through spatial maps and visualizations.

Unit – I (15 h)

Unit 1: Introduction to Health Mapping and GIS

Overview of GIS: Basic concepts, history, and importance in public health.
Geographic information systems (GIS) in public health: Tools, components, and applications.
Spatial data: Types of spatial data (vector, raster) and their uses in health mapping.

Health data sources: Epidemiological data, demographic data, and environmental data.
Introduction to GIS software: Popular GIS platforms used in public health.

Unit – II (15h)

Unit 2: Spatial Data Analysis in Health Mapping

Data collection for health mapping: Survey techniques, remote sensing, and health databases.
Geospatial analysis techniques: Buffer analysis, overlay analysis, and spatial interpolation.
Mapping disease incidence: Spatial patterns of diseases and factors influencing health outcomes.
Geographic distribution of healthcare services: Accessibility, distribution of healthcare facilities.
Geospatial epidemiology: Understanding spatial patterns in the spread of infectious and non-communicable diseases.

Unit – III (15 h)

Unit 3: GIS in Health Surveillance and Environmental Health

Health surveillance: Role of GIS in monitoring public health trends (e.g., infectious diseases, environmental hazards).
Environmental health mapping: Air pollution, water contamination, and waste management.
Risk mapping and vulnerability analysis: Identifying high-risk areas for diseases, natural disasters, and health disparities.
GIS in maternal and child health: Mapping the accessibility and distribution of healthcare services.
GIS in disaster management: Identifying vulnerable populations and planning for public health emergencies.

Unit-IV (15h)

Unit 4: GIS Applications in Public Health Policy and Decision Making

Role of GIS in health policy: How maps and spatial data inform policy decisions.
Health interventions: Using GIS for targeting interventions and monitoring their effectiveness.
Communicating health data: Visualizing data through thematic maps, 3D maps, and dashboards.
Case studies: Successful GIS applications in public health programs (e.g., malaria eradication, vaccination campaigns).
Future trends in health mapping: Advances in GIS technology, big data, and artificial intelligence in health mapping.

Suggested Readings:

1. Elwood, S., & Goodchild, M. F. (2009). Introduction to GIS in Public Health (1st ed.). SAGE Publications.
2. Zhang, Y., & Ma, Z. (2014). Geographic Information Systems in Public Health (1st ed.). Wiley-Blackwell.
3. Ravi, K. (2015). Geographic Information Systems for Public Health (1st ed.). Springer.
4. Tata, M., & Sharma, P. (2017). Health Mapping and GIS Applications in Public Health (1st ed.). SAGE Publications India.
5. Burton, L. M., & Hebert, J. R. (2018). GIS for Health Applications: Emerging Technologies and Approaches (1st ed.). Oxford University Press.
6. Tom, M., & Pereira, S. (2016). GIS in Public Health: Analysis and Applications (2nd ed.). CRC Press.
7. Rao, P. S., & Kumar, M. (2013). Health Geography and GIS (1st ed.). Indian Institute of Health.
8. Kang, S., & Yoon, J. (2019). GIS for Public Health: Theory and Practice (1st ed.). Springer.
9. Bansal, R., & Singh, A. (2017). Geographic Information Systems in Health and Disease Mapping (1st ed.). SAGE Publications India.

Semester-VIII

Name of the Course	Advanced Epidemiology and Biostatistics	Level	Major
Course Code	27IPHH408DS03	Duration and credits	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	Workload	4 Hours/week

Course Objectives

1. To deepen understanding of advanced epidemiological methods for disease surveillance and research.
2. To develop skills in the application of biostatistical techniques for analyzing complex health data.
3. To understand the role of advanced epidemiology and biostatistics in evidence-based public health decision-making.
4. To gain proficiency in statistical software for data analysis in public health research.
5. To evaluate and critically interpret public health research findings using advanced analytical tools.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Design and implement advanced epidemiological studies for public health research.
2. Apply sophisticated biostatistical methods for data analysis in health research.
3. Utilize statistical software to manage, analyze, and visualize public health data.
4. Evaluate and interpret complex health datasets to inform public health interventions.
5. Integrate epidemiological and biostatistical techniques in real-world public health scenarios.

Unit – I (15 h)

Unit 1: Advanced Concepts in Epidemiology

Study designs: Nested case-control, cohort studies, and randomized controlled trials (RCTs).
Causation in epidemiology: Causal inference, Bradford Hill criteria.
Advanced measures of association: Attributable risk, population attributable risk, and odds ratio.
Effect modification and confounding: Identification, control, and interpretation.
Epidemiological surveillance: Advanced techniques in monitoring and tracking disease trends.

Unit – II (15h)

Unit 2: Advanced Biostatistical Methods

Regression analysis: Logistic regression, Poisson regression, and survival analysis.
Multivariable analysis: Applications in public health.
Longitudinal data analysis: Methods and applications.
Bayesian statistics in public health: Concepts and uses.
Handling missing data: Techniques and software solutions.

Unit – III (15 h)

Unit 3: Statistical Software Applications

Overview of statistical softwares.
Data management and cleaning using statistical software.
Advanced statistical modeling: Applications in real-world datasets.
Visualization of health data: Graphs, heat maps, and other visual tools.

Practical applications of software in epidemiological studies and data interpretation.

Unit-IV (15h)

Unit 4: Applications of Advanced Epidemiology and Biostatistics

Advanced epidemiological studies: Non-communicable diseases, infectious diseases, and environmental health.
Evidence synthesis: Systematic reviews and meta-analysis.
Application of statistical methods in health policy and planning.
Data science in public health: Big data analytics and machine learning.
Case studies: Applications of advanced methods in public health research and practice.

Suggested Readings:

1. Gordis, L. (2014). Epidemiology (5th ed.). Elsevier.
2. Kleinbaum, D. G., & Klein, M. (2012). Survival Analysis: A Self-Learning Text (3rd ed.). Springer.
3. Sullivan, L. M. (2018). Essentials of Biostatistics in Public Health (3rd ed.). Jones & Bartlett Learning.
4. Rosner, B. (2016). Fundamentals of Biostatistics (8th ed.). Cengage Learning.
5. Friis, R. H., & Sellers, T. A. (2021). Epidemiology for Public Health Practice (6th ed.). Jones & Bartlett Learning.
6. Pagano, M., & Gauvreau, K. (2018). Principles of Biostatistics (2nd ed.). CRC Press.
7. Gupta, P., & Khurana, I. (2019). Epidemiology and Biostatistics in Public Health (1st ed.). Jaypee Brothers Medical Publishers.
8. Rao, P. S. R. S. (2012). Principles and Practice of Biostatistics (1st ed.). BI Publications.
9. Doshi, S. (2020). Biostatistics and Research Methodology (1st ed.). CBS Publishers.
10. Daniel, W. W., & Cross, C. L. (2018). Biostatistics: A Foundation for Analysis in the Health Sciences (11th ed.). Wiley.

Semester-VIII

Name of the Course	**Food Toxicology and Food Safety**	**Level**	**Major**
Course Code	27IPHH408DS04	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To understand the principles of food safety and its importance in public health.
2. To learn about foodborne hazards, including chemical, biological, and physical contaminants.
3. To study the toxicological effects of food contaminants and additives on human health.
4. To explore national and international food safety regulations and standards.
5. To develop strategies for ensuring food safety in various sectors and prevent foodborne illnesses.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Identify various foodborne hazards and their implications for human health.
2. Understand and apply principles of toxicology to food safety issues.
3. Evaluate food safety regulations and standards at national and international levels.
4. Develop strategies for food safety management and risk reduction.
5. Analyze and address real-world food safety challenges using case studies and research.

Unit – I (15 h)

Unit 1: Introduction to Food Toxicology

Definition and scope of food toxicology.
Types of food contaminants: Chemical, biological, and physical.
Dose-response relationships and toxicokinetics in food toxicology.
Naturally occurring toxins in food: Mycotoxins, alkaloids, and marine toxins.
Mechanisms of foodborne toxicant action and health implications.

Unit – II (15h)

Unit 2: Food Safety and Contamination

Foodborne diseases and their impact on public health.
Microbial contamination in food: Bacteria, viruses, and parasites.
Chemical contaminants: Pesticides, heavy metals, and food additives.
Genetically modified organisms (GMOs) and their safety concerns.
Cross-contamination and prevention in food handling and processing.

Unit – III (15 h)

Unit 3: Regulations and Standards in Food Safety

National food safety regulations: Food Safety and Standards Authority of India (FSSAI) guidelines.
International food safety standards: Codex Alimentarius, WHO, and FAO guidelines.
Risk assessment and management in food safety.
Food labeling laws and consumer protection.
Case studies: Food safety violations and their consequences.

Unit-IV (15h)

Unit 4: Food Safety Practices and Toxicology Applications

Hazard Analysis Critical Control Point (HACCP) principles in food safety.
Risk communication and consumer education in food safety.
Analytical methods in food toxicology: Detection of contaminants and residues.
Food preservation techniques and their impact on safety.
Role of public health professionals in ensuring food safety.

Suggested Readings:

1. Sharma, R. P., & Salunkhe, D. K. (2018). Food Toxicology (2nd ed.). CRC Press.
2. Egan, M. B., & Raats, M. M. (2010). Risk Communication and Food Safety (1st ed.). Springer.
3. Fung, F., & Clark, R. (2014). Food Safety and Toxicology (1st ed.). CRC Press.
4. Marsh, K., & Bugusu, B. (2018). Food Packaging and Safety (1st ed.). Academic Press.
5. Jay, J. M. (2012). Modern Food Microbiology (7th ed.). Springer.
6. FSSAI (2019). Food Safety and Standards in India (1st ed.). McGraw Hill Education.
7. Awasthi, P. K. (2020). Food Safety and Standards Act of India (1st ed.). New India Publishing Agency.
8. Kiple, K. F. (2007). A Companion to Food History (1st ed.). Blackwell Publishing.
9. Liu, Y., & Wu, F. (2010). Food Safety Risk Management in Developing Countries (1st ed.). Springer.
10. Pineiro, M., & Barcos, L. O. (2008). Food Safety and Public Health (1st ed.). FAO Publications.

Semester-VIII

Name of the Course	**Water, Sanitation and Hygiene (WASH)**	**Level**	**Major**
Course Code	27IPHH408DS05	**Duration and credits**	60hrs/4 credits
Max. Marks.	100 (70 marks for External Exam + 30 marks for Internal Evaluation)	**Workload**	4 Hours/week

Course Objectives

1. To understand the importance of water, sanitation, and hygiene (WASH) in public health.
2. To analyze the interrelationship between WASH and the prevention of communicable diseases.
3. To study the policies and programs promoting WASH in India and globally.
4. To explore sustainable strategies for improving WASH services in urban and rural settings.
5. To equip students with practical knowledge for planning and implementing WASH interventions.

Course Outcomes

Upon successful completion of this course, students will be able to:

1. Comprehend the critical role of WASH in promoting public health and preventing diseases.
2. Analyze and address the challenges in water, sanitation, and hygiene in different settings.
3. Design and implement sustainable WASH interventions.
4. Evaluate the effectiveness of WASH programs and policies.
5. Advocate for improved WASH practices and infrastructure in communities.

Unit – I (15 h)

Unit 1: Introduction to WASH

Overview of WASH: Definitions, components, and significance in public health.
Global and national burden of WASH-related diseases.
Sustainable Development Goals (SDG 6) and their relevance to WASH.
Waterborne diseases: Causes, prevention, and public health implications.
The nexus between water quality, sanitation, and hygiene.

Unit – II (15h)

Unit 2: Water and Public Health

Sources of drinking water and types of contamination.
Water purification techniques: Filtration, chlorination, and advanced methods.
Community water supply systems: Design, challenges, and management.
Safe water storage practices and behavioral interventions.
Impact of climate change on water resources and public health.

Unit – III (15 h)

Unit 3: Sanitation and Hygiene Practices

Sanitation systems: On-site sanitation, sewerage, and waste management.
Open defecation: Challenges, health implications, and eradication strategies.
Hand hygiene: Techniques, promotion, and barriers to adoption.
Menstrual hygiene management: Practices, challenges, and interventions.

Behavioral change communication for improved hygiene practices.
Unit-IV (15h)
Unit 4: WASH Policies, Programs, and Innovations National policies and programs: Swachh Bharat Abhiyan, Jal Jeevan Mission. International initiatives: WHO/UNICEF Joint Monitoring Programme for WASH. Monitoring and evaluation of WASH programs: Indicators and tools. Emerging technologies and innovations in WASH. Role of public health professionals in WASH advocacy and community engagement.
Suggested Readings: 1. Bartram, J., & Cairncross, S. (2010). Hygiene, Sanitation, and Water: Forgotten Foundations of Health (1st ed.). WHO Publications. 2. Prüss-Üstün, A., & Bos, R. (2019). Safer Water, Better Health (1st ed.). World Health Organization. 3. Jha, D. K. (2020). WASH in India: Challenges and Opportunities (1st ed.). Sage Publications India. 4. Luby, S. P., & Halder, A. K. (2016). Improving Hygiene Behaviors in Low-Income Settings (1st ed.). Springer. 5. Swaminathan, M. S. (2015). Clean Water and Sanitation for All (1st ed.). Oxford University Press. 6. UNICEF & WHO (2020). Progress on Drinking Water, Sanitation, and Hygiene (1st ed.). WHO Press. 7. Black, R. E., & Walker, N. (2018). Disease Control Priorities: Water, Sanitation, and Hygiene (1st ed.). World Bank Publications. 8. Biswas, A. K. (2019). Water for Sustainable Development (1st ed.). Routledge.

Note:

- In BPHS Semester VIII, the Skill Enhancement Course i.e. Current issues and Public Health (27IPHH408SE01) is based on Seminar/Assignments/GD will be designed and delivered as per need.

- The students who will opt BPHS with Research Degree will have to undergo a Research Project/Dissertation of 12 credits under an assigned supervisor.