

## **Reproductive Epidemiology** IPBH-3000 (3 credits)

### **India: Public Health, Gender, and Sexuality**

*This syllabus is representative of a typical semester. Because courses develop and change over time to take advantage of unique learning opportunities, the actual course content varies from semester to semester.*

#### **Course Description**

This course orients students to a critical appreciation of the epidemiological rationale underpinning reproductive and sexual health interventions through the health service system in India. Transacted through a combination of classroom teaching, field excursions, and workshops, the course acquaints students with basic principles, measures, and methods to study the distribution and determinants of disease and other reproductive and sexual health-related states at the population level. Students understand how epidemiological tools are used by practitioners and scholars to design programs for healthcare delivery and to rationalize the use of available resources to efficaciously and efficiently check mortality and suffering due to disease and injury.

The Indian public health establishment's history of engagement with questions of reproduction began with the impetus to control population, but soon recognized the interconnectedness of maternal health, child survival, and limiting family size to deliver contraceptive services for family planning and maternal and child health services together. More recently the importance of a life course approach to address reproductive and sexual health early has resulted in interventions to check adolescent anemia, promote menstrual health, awareness of the body, and education about sex and sexuality. The course focuses on measures to assess a range of reproductive health needs and monitor the progress of interventions to meet the need for contraception (modern and natural), remedy infertility among couples, reduce levels of maternal morbidity & mortality and infant mortality and assess and check the extent of adolescent anemia, among others. The course will thus enable students to understand the field-level evidence and assess the gaps and achievements of the preventive, promotive, and curative reproductive and sexual health care delivered through the public health care system in India.

The field excursions (in the rural Himalayas and in Goa) and workshops (in rural Maharashtra or Udaipur-Rajsthan) will be opportunities to learn from the application of concepts and methodological challenges in reproductive and perinatal epidemiology and to evaluate the contribution of sociodemographic, behavioral, and biological risk factors for adverse outcomes at family and the community level. Field excursions and workshops will offer an opportunity to understand the pathways through which epidemiological associations play out at the field level

and how program design needs to be responsive to local specificities. They will expose students to the challenges posed by epidemiology geared towards action and introduce them to innovations addressing real-world constraints.

### **Learning Outcomes**

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

- Explain the distribution and determinants of reproductive health problems at the population level in a middle-income country like India.
- Apply conceptual knowledge to assess the status of reproductive health problems in a population;
- Evaluate various epidemiological approaches and issues in collecting population-level data;
- Apply survey data to the design of policy and program interventions;
- Use the concepts and measures of contraceptive prevalence, couple protection, and unmet need to analyze the provision of reproductive health services at various levels of the three-tier public health care system in India.

### **Language of Instruction**

This course is taught in English, but students will be exposed to local vocabulary related to the course content as well as the nuances of reproductive and sexual health through lectures by in-country experts, workshops, and field visits to grassroots and advocacy organizations in different parts of India.

### **Instructional Methods**

Teaching-learning in this course is an active process that takes place through a combination of classroom instruction, workshops, site visits, excursions, and field-based study. 'Concrete experience' coupled with 'active reflective observation' will help students synthesize classroom and practice-based knowledge to understand the socially embedded nature of the production of scientific knowledge and practice. Students will witness challenges imposed by the real-world constraints of rural settings and the innovations in data collection and program design that respond to the same, to provide effective preventive, promotive, and curative services. In witnessing epidemiological surveillance in action students will also gain an understanding of how scientific, socio-cultural, and moral frameworks inform indicators of coverage and quality of healthcare.

Given that instruction also draws heavily on an experiential learning component, the reflective practice of journaling will help students make sense of dissonances between theoretical, and epidemiological knowledge and its application in policy formulation, program design, and implementation on the ground. Students will navigate their way through the 'disorienting dilemmas' these engagements produce, which will also give them an opportunity to engage with the difference between resource-rich and resource-poor healthcare systems empathetically, to arrive at a more nuanced understanding of reproductive and sexual health.

Sessions facilitating individual and shared reflection are a means to arrive at a reformulated understanding of the particular ways in which scientific practice in India both produces and is a product of the socio-cultural and political processes peculiar to India's neoliberal, globalized, post-colonial context.

## **Required Texts**

Bonita, R., Beaglehole, R., & Kjellström, T. (2006). What is epidemiology? In *Basic epidemiology* (pp. 14–26). World Health Organization.

Gol, MoHFW (2019-20). *The National Family Health Survey: India Fact Sheet*. Indian Institute of Population Studies. Mumbai.

Gol, MoHFW (2019-20). *Health and Family Welfare Statistics in India*. Statistics Division. National Health Mission. New Delhi.

Additional readings and articles as assigned.

## **Assignments and Evaluation**

### **1) Mapping and Critical Analysis of Reproductive Health Services (40%)**

Each student will be expected to map the use of the concepts and measures of contraceptive prevalence, couple protection, unmet need, and maternal health services to critically analyze the synergies sought in the various reproductive health services provided at different levels of the three-tier public health care system in India in a 2000-word paper. The paper will be based on a site visit to institutions at various levels of the public health service system in the rural Himalayas. In the paper, the students should also be able to comment on the nature of coverage, and the populations/communities that might be excluded from the services and suggest potential shifts in the epidemiological approach that could inform program and policy to make both more inclusive.

### **2) Group Presentation (30%)**

Students will be expected to select any one issue addressed by NGOs and CSO interventions in reproductive and sexual health and make a group presentation on the same. The presentation must include a timeline of the intervention- from problem identification, assessment, and prioritization, program design, implementation and rationale for the choice of human resource, their training, methods of ongoing monitoring and recalibration, the challenges faced in implementation, solutions designed to finally, the public health impacts of these interventions over time.

### **3) Excursion Report (20%)**

Following the first excursion to the rural Himalayas, students will be expected to write a 1500-word analytical paper focusing on observations made during the visit, issues raised and/or presentations made by health professionals during the visit, and overall learning.

#### **4) Participation (10%)**

This includes active involvement in lectures, readings, discussions, and excursions using the following criteria:

- Attendance - promptness and positive presence in class.
- Active Listening - paying attention in class and during field excursions, asking appropriate questions, showing interest and enthusiasm (this includes body language), entertaining contradictory perspectives, and taking notes.
- Involvement in Class Discussions - either in small or large groups, sharing knowledge. This means challenging yourself to speak up if you usually don't, and also means allowing others to speak if you are a person who tends to dominate class discussions.
- Group Accountability – positive participation in the group during field excursions and classes; not keeping others waiting.
- Being Respectful – culturally appropriate interaction with hosts, SIT program staff, SIT lecturers, and communities.
- Valid reasons for absence – such as illness – must be discussed with the academic director or the designated person from the staff. Absences impact academic performance may impact grades and could result in dismissal from the program

#### Assessment

(1) Health Systems Mapping Exercise	40%
(2) Group Presentation	30%
(3) Excursion report	20%
(4) Attendance, Participation and Completion of Assigned Readings	10%

#### Late Assignments

SIT Study Abroad programs integrate traditional classroom lectures and discussions with field-based experiences, site visits and debriefs. The curriculum is designed to culminate in projects/ISPs/case studies/internships etc. To maximize learning from the program, it is critical that students complete given tasks in a timely manner to maintain continuity in the sequence of assignments, reflections, and experiences throughout the program.

However, in the event of a delay, students may request a justified extension for one paper/assignment during the semester. Requests must be made in writing and at least 12 hours before the posted due date and time. If the reason for the request is accepted, an extension of up to one week may be granted at that time. Any further requests for extensions will not be granted. Students who fail to submit the assignment within the extension period will receive an 'F' for the said assignment.

### Grading Scale

94-100%	A
90-93%	A-
87-89%	B+
84-86%	B
80-83%	B-
77-79%	C+
74-76%	C
70-73%	C-
67-69%	D+
64-66%	D
below 64	F

### **Program Expectations**

- Show up prepared. Be on time, have your readings completed, and have points in mind for discussion or clarification. Complying with these elements raises the level of class discussion for everyone.
- Have assignments completed on schedule, printed, and done accordingly to the specified requirements. This will help ensure that your assignments are returned in a timely manner.
- Ask questions in class. Engage the lecturer. These are often very busy professionals who are doing us an honor by coming to speak.
- Comply with academic integrity policies (no plagiarism or cheating, nothing unethical).
- Respect differences of opinion (classmates, lecturers, and local constituents engaged with on the visits). You are not expected to agree with everything you hear, but you are expected to listen across differences and consider other perspectives with respect.
- Storing Your Work: Keep several copies of your work as backup and keep one copy accessible to you through an online forum, such as an attachment in your email, the course learning management system, or cloud-based storage. This way your work will always be available to you despite technical issues. Lost files, deleted drives, or computer crashes are not excuses for late, missing work.
- Personal Technology Use: Cell phones and other personal electronics can be used for taking notes and other class activities. Off-task usage is not acceptable. You may be marked as absent for habitually using them for something other than classroom activities.

- **Course Communication:** Course documents and assignments will be posted on the learning management system, Canvas. Although the course calendar provides a broad overview and the general sequence of work and assignments for the course, what we accomplish in class will vary, and revisions to the calendar will be posted on the course site. You will need to check the course site regularly. You are responsible for letting me know about any network-related problems that prevent you from accessing or submitting assignments.
- **Content Considerations:** Some texts and activities you will encounter in this course delve into sensitive topics that may be emotionally and intellectually challenging. Our classroom is a space where we can engage with challenging ideas, question assumptions, and navigate difficult topics with respect and maturity. I will flag content and activities that are especially graphic or intense, so we are prepared to address them soberly and sensitively. If you are struggling to keep up with the work or participate in the course because of the nature of the content and activities, you should speak with me and/or seek help from counseling services.
- **Classroom recording policy:** To ensure the free and open discussion of ideas, students may not record classroom lectures, discussions and/or activities without the advance written permission of the instructor. Any such recording properly approved in advance can be used solely for the student's own private use.

## **SIT Policies and Resources**

Please refer to the [SIT Study Abroad Handbook](#) and the [Policies](#) section of the SIT website for all academic and student affairs policies. Students are accountable for complying with all published policies. Of particular relevance to this course are the policies regarding academic integrity, the Family Educational Rights and Privacy Act (FERPA), research and ethics in field study and internships, late assignments, academic status, academic appeals, diversity and disability, sexual harassment and misconduct, and the student code of conduct.

Please refer to the SIT Study Abroad Handbook and SIT website for information on important resources and services provided through our central administration in Vermont, such as [Library resources and research support](#), [Disability Services](#), [Counseling Services](#), [Title IX information](#), and [Equity, Diversity, and Inclusion](#) resources.

## **Course Schedule**

### **Module 1: Introduction to Epidemiology**

Module 1 is an introduction to epidemiology: the basic science of public health, the study of the distribution and causation of disease and other health-related phenomena at a population level. You will be acquainted with an epidemiological approach that enables professionals to have a rational basis to develop methods and strategies to prevent or check the spread of conditions deleterious to human health, morbidity, and mortality. You will also learn of its role in informing health policy at the population level and the various methodological approaches to measuring health conditions.

### **Week 1: Principles and Methods in Epidemiology**

In the first week, you will be introduced to the basic epidemiological principles and methods applied to understand the determinants and distribution of disease and health-related states in populations and the etiology and pathways of causation of disease or specific conditions at the population level.

#### *Required Reading:*

Bonita, R., Beaglehole, R., & Kjellström, T. (2006). What is epidemiology? In *Basic epidemiology* (pp. 14–26). World Health Organization.

### **Week 2: Measuring Health and Disease**

Assessing health and disease in populations through measures of morbidity and mortality is fundamental to the practice of epidemiology. It enables public health systems to track changes in populations and monitor risk for preventive intervention. A variety of measures are used to characterize the overall health of populations. In this session, we discuss the basic measures, their uses, the methodological nuances in measurement, tools, and sources of population data.

#### *Required Reading:*

Bonita, R., Beaglehole, R., & Kjellström, T. (2006). Measuring health and disease. In *Basic epidemiology* (pp. 15–38). World Health Organization.

Dandona, R., Pandey, A., & Dandona, L. (2016). A review of national health surveys in India. *Bulletin of the World Health Organization*, 94(4), 286–296A. <https://doi.org/10.2471/blt.15.158493>

### **Week 3: Types of Studies in Epidemiology**

Choosing the appropriate study design is a crucial step in an epidemiological investigation. Epidemiologists must consider all sources of bias and confounding factors and strive to reduce them. This session will explain the types of study designs used in epidemiology to understand causation and association, assess preventive and therapeutic methods, and estimate risk.

#### *Required Reading:*

Bonita, R., Beaglehole, R., & Kjellström, T. (2006). Types of studies. In *Basic epidemiology* (pp. 39-61). World Health Organization.

### **Week 4: Basic Biostatistics**

This introductory lecture on biostatistics will orient you to methods of drawing epidemiological inferences about larger populations from selected samples. Further, you will be introduced to the use of statistical methods and models for making predictions and projections to enable strategic planning to prevent public health problems or check their progression.

#### *Required Reading:*

Bonita, R., Beaglehole, R., & Kjellström, T. (2006). , Biostatistics: Concepts and Tools. In *Basic epidemiology* (pp. 63-82). World Health Organization.

## **Module 2: Maternal and Child Health**

Module 2 will introduce you to the epidemiological issues in maternal and infant health, both cardinal components of the Reproductive Health Program in India. You will engage with case studies on maternal and infant health and mortality.

### ***Week 5: Measures and Determinants of Maternal Health: Maternal Morbidity and Mortality***

Safe motherhood includes the prevention of maternal mortality and morbidity. The lecture will provide you with a working knowledge of how epidemiology can be applied to the issue of maternal health to reduce maternal mortality and morbidity.

#### *Required Readings*

Patel, A. D., Burnett, N. M., Curtis, K. M. (2003). *Maternal Health Epidemiology*. Reproductive Health Module-02. U.S. Department of Health and Human Services, CDC.

### ***Week 6: Measures and Determinants of Infant Health***

Infant mortality rates are considered a sensitive indicator of the health of countries and an index of social development around the globe. Highly sensitive to structural inequalities, infant mortality rates also reflect the levels of medical care and preventive and promotive interventions in a country. In this week you will explore the factors affecting the quality of data collection, methods used and measures to ensure data quality in the context of infant mortality.

#### *Required Readings:*

Hill, K. (1991). Approaches to the Measurement of Childhood Mortality: A Comparative Review. *Population Index*, 57(3), 368. <https://doi.org/10.2307/3643873>

Sample Registration Bulletin. (2022, May). Vital Statistics Division, Office of the Registrar General. Government of India, New Delhi. 55(1).

#### *Recommended Readings:*

Suwal, J. V. (2001). The main determinants of infant mortality in Nepal. *Social Science & Medicine*, 53(12), 1667–1681. [https://doi.org/10.1016/S0277-9536\(00\)00447-0](https://doi.org/10.1016/S0277-9536(00)00447-0)

Agha, S. (2000). The determinants of infant mortality in Pakistan. *Social Science & Medicine*, 51(2), 199–208. [https://doi.org/10.1016/S0277-9536\(99\)00460-8](https://doi.org/10.1016/S0277-9536(99)00460-8)

## **Module 3: Contraception, Fertility, and Infertility**

In this module, you will focus on the promotive, preventive, and curative dimensions of reproduction, in the public health service system of India. The focus will be on temporary and permanent methods of contraception to plan and control family size, measures to prevent, treat and limit the spread of STIs, the availability and regulation of assisted reproduction technologies, and finally a case study on adolescent sexual health. You will analyze trends in the health problem under consideration and discuss the ways in which culture, social norms, economic conditions, and politics interfere with the choices individuals and collectives make.

### ***Week 7: Family Planning in India***

Family planning services include the provision of information, means to control the number and spacing of births and limit family size. In this week you will examine the concepts of unmet need,

couple protection rate and others used to assess the utilization of contraception among married heterosexual couples in India. The lecture will provide you with an overview of the methods, their adequacy, availability, and acceptability, and the socio-cultural, political, and economic determinants that shape family planning choices exercised within marriage in India. You will also be introduced to the data collected in the National Family Health Survey, the principles involved, in design, conducting surveys, data collection and analysis in relevant domains of reproductive

*Required Readings:*

Ministry of Health and Family Welfare. (2017-18). *Annual Report, Chapter 06*. Government of India Press. New Delhi, India

Gray, R. H., & Kambic, R. T. (1988). Epidemiological studies of natural family planning. *Human Reproduction*, 3(5), 693–698. <https://doi.org/10.1093/oxfordjournals.humrep.a136768>

IIPS The National Family Health Survey-5 Available at <http://rchiips.org/nfhs/nfhs5.shtml>

*Recommended Readings:*

World Fertility and Family Planning 2020. (2020). United Nations Department of Economic and Social Affairs, Population Division. United Nations.

***Week 8: Contraceptive Safety and Efficacy***

The safety and efficacy of contraceptive methods affect their utilization. Contraceptive methods are important not only to prevent unwanted births but also to prevent STIs and maintain sexual health. In this session, you will learn about issues in the use of temporary and permanent methods of contraception, their safety, and adverse effects, and the barriers to expanding options for male contraception in India. The lecture will also present an overview of the provision of these methods through the public health service system, and the perceptions and experiences shaping their utilization in India.

*Required Readings:*

Teal, S., & Edelman, A. (2021). Contraception Selection, Effectiveness, and Adverse Effects: A Review. *JAMA*, 326(24), 2507–2518. <https://doi.org/10.1001/jama.2021.21392>

United Nations Population Division. (2019, December 31). *Contraceptive Use by Method 2019*. [www.un.org](http://www.un.org); United Nations. <https://www.un.org/development/desa/pd/content/contraceptive-use-method-2019>

***Week 9: Infertility and Assisted Reproductive Technologies***

The lecture will examine the prevalence of infertility in India and analyze by gender the various determinants of infertility like disease, age, and cultural and social practices that affect the reproductive age of couples. In this session, you will also explore the existing frameworks of regulation and the moral and ethical dilemmas arising from the use of assisted reproductive technologies in the Indian context.

### Required Readings:

- Elhoussein, O. G., Ahmed, M. A., Suliman, S. O., Yahya, I., & Adam, I. (2019). Epidemiology of infertility and characteristics of infertile couples requesting assisted reproduction in a low-resource setting in Africa, Sudan. *Fertility Research and Practice*, 5(1). <https://doi.org/10.1186/s40738-019-0060-1>
- Vander Borght, M., & Wyns, C. (2018). Fertility and infertility: Definition and epidemiology. *Clinical Biochemistry*, 62, 2–10. <https://doi.org/10.1016/j.clinbiochem.2018.03.012>

### Recommended Readings:

- Pande, A. (2010). “At Least I Am Not Sleeping with Anyone”: Resisting the Stigma of Commercial Surrogacy in India. *Feminist Studies*, 36(2), 292–312. <http://www.jstor.org/stable/27919102>

### **Week 10: Adolescent Sexual Behaviour**

This lecture will focus on adolescence as a developmental period marked by the physical transition from childhood to adulthood, and its sociocultural and public health relevance in the Indian context. This lecture will discuss the sexual and reproductive health needs of adolescents, the bio-social and cultural determinants of adolescent behavior, and the impact of the same on their physical and mental health in India.

### Required Readings:

- Gupta, N., Anwar, A., Varun, N., Paneesar, S., & Nigam, A. (2020). Adolescent sexual behaviour and its determinants: A hospital-based study. *Journal of Family Medicine and Primary Care*, 9(11), 5511–5515. [https://doi.org/10.4103/jfmpc.jfmpc\\_1115\\_20](https://doi.org/10.4103/jfmpc.jfmpc_1115_20)
- Kalaivani, S., & Maheswari, S. U. (2017). Pattern of sexual behavior in adolescents and young adults attending STD clinic in a tertiary care center in South India. *Indian Journal of Sexually Transmitted Diseases and AIDS*, 38(2), 171. [https://doi.org/10.4103/ijstd.ijstd\\_9\\_16](https://doi.org/10.4103/ijstd.ijstd_9_16)

### Recommended Reading:

- Maaan, A., Yadav, M. K., & Chaudhary, S. S. (2021). A study on sexual behaviour practiced by the adolescent and its source of inspiration. *International Journal of Community Medicine and Public Health*, 8(4), 1911. <https://doi.org/10.18203/2394-6040.ijcmph20211254>

## EXCURSIONS AND WORKSHOPS

### **Excursion to Rural Himalayas, Uttarakhand**

A week-long excursion in the Himalayas will orient students to the primary health care system in rural India. They will observe the delivery of reproductive and sexual health care services at the primary, secondary, and tertiary levels through village sub-centers, primary health centers, community health centers, and district government hospitals. In interactive sessions with doctors, paramedics, health workers, and trained birth attendants at government health care

institutions and the local NGO; and with adolescent girls and women's groups in the villages, you will observe the collection and utilization of epidemiological data to provide different levels of healthcare to meet the reproductive and sexual health needs of populations in Nainital district of Uttarakhand state.

### **Community-based Reproductive Epidemiology – Jamkhed**

A workshop at the Comprehensive Rural Health Project (CRHP) in Jamkhed will be an opportunity to learn methodological issues in collecting community-based epidemiological knowledge by partnering with village communities. The initiative has successfully utilized field epidemiology, training health volunteers to collect surveillance data, and building on local knowledge and resources, to meet the immediate and long-term reproductive and sexual health needs of men, women, and adolescents in under-resourced communities in the Ahmednagar district of Maharashtra.