

# PUBLIC HEALTH MODELING CONCENTRATION

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Students in the traditional two-year M.P.H. program may complete this concentration while they satisfy the requirements of their respective departments or programs.

The Public Health Modeling Concentration (PHMC) provides rigorous training in *systems thinking*: the explicit portrayal of real-world processes – their “physics,” their interactions, and their dynamics – that leave populations vulnerable to risk and disease. The concentration will train students to generate evidence about how those processes might behave under different specifications, with or without intervention. Modeling serves as a practical means of assembling the existing evidence base about mechanisms and conducting formal assessments in situations where financial, logistical, temporal, and/or ethical obstacles may conspire against the implementation and study of those mechanisms in real life.

## CONCENTRATION REQUIREMENTS

EPH 521	Applied Practice Experience	0
EPH 580	Seminar for Modeling in Public Health <sup>2</sup>	0
EPH 581	Seminar for Modeling in Public Health <sup>2</sup>	0

<sup>1</sup> A substantive modeling component is required of the APE.

<sup>2</sup> Two terms of Seminar for Modeling in Public Health (EPH 580/EPH 581) are required in a student’s first two years in the M.P.H. program; but they need not be taken consecutively, and students may satisfy the requirement by taking two terms of EPH 580 or two terms of EPH 581.

Two of the following:

BIS 567	Bayesian Statistics	1
EMD 538	Quantitative Methods for Infectious Disease Epidemiology	1
EMD 539	Introduction to the Analysis and Interpretation of Public Health Surveillance Data	1
EMD 553	Transmission Dynamic Models for Understanding Infectious Diseases	1
HPM 570	Cost-Effectiveness Analysis and Decision-Making	1
HPM 573	Advanced Topics in Modeling Health Care Decisions	1
S&DS 538	Probability and Statistics	1

Two additional electives courses chosen from a preapproved list or by approval of the concentration committee <sup>1</sup> 2

<sup>1</sup> A list of preapproved elective courses is available online at <https://ysph.yale.edu/myysph/curriculum/mpH/modeling/electives>.

## COMPETENCIES

Each student in the Public Health Modeling Concentration will master the core curriculum competencies and the competencies for the student's department/program. In addition, upon receiving an M.P.H. degree in the Public Health Modeling Concentration, the student will be able to:

- Identify questions in public health policy and practice that may be amenable to model-based approaches
- Demonstrate that modeling is advantageous in describing the processes that drive transmission and control of infectious diseases
- Apply stochastic and deterministic modeling approaches, including computational methods for simulation and data analysis
- Review, critique, and interpret the findings of model-based public health research and peer-reviewed literature
- Implement computer code to numerically analyze the behavior of models