

# MATHEMATICS AND PHILOSOPHY

**Directors of undergraduate studies:** Sebastian Hurtado-Salazar (sebastian.hurtado-salazar@yale.edu) (Mathematics), Miki Havlickova (miki.havlickova@yale.edu) (Mathematics), Math DUS (math.dus@yale.edu); Keith DeRose (keith.derose@yale.edu) (Philosophy)

The Mathematics and Philosophy major allows students to explore those areas where philosophy and mathematics meet, in particular, mathematical and philosophical logic and the philosophy of mathematics.

## PREREQUISITE

The prerequisite for the major is MATH 1200. Substitution of MATH 3020 for MATH 1200 is permitted; students without prior experience with multivariable calculus must consult with the Math DUS before selecting this option. Note that MATH 3020 requires MATH 2250 and 2550 to be taken first.

## REQUIREMENTS OF THE MAJOR

The major requires twelve term courses including the prerequisite and the senior seminar. Of the remaining courses, at least four must be in mathematics level 2220-4690, and five must be in philosophy. The remaining course may be either a mathematics or philosophy course. All philosophy courses are eligible for credit toward the major, except First-Order Logic (PHIL 1115). Required courses include Set Theory (MATH 2700), Mathematical Logic (PHIL 2267), Computability and Logic (PHIL 4427), an additional advanced philosophy course with a substantive logical component (other than PHIL 4427) that fulfills the senior requirement (see below). Set Theory (MATH 2700) and Mathematical Logic (PHIL 2267) must be taken before the end of the junior year; it is strongly recommended that they be taken earlier.

Courses from other departments can count toward the math requirements of the major (including the prerequisite) only if they have an undergraduate MATH number. Graduate mathematics courses at level 5000-5999 may be counted as electives; graduate mathematics courses level 6000 or above may not be counted.

## SENIOR REQUIREMENT

Each year certain seminars offered by the Mathematics and Philosophy departments are designated as fulfilling the senior requirement of the combined major. If such a seminar is taken to fulfill the senior requirement, majors must consult with the instructor and agree upon additional work required. Typically, additional work includes a substantial class presentation and/or preparation of a series of drafts before submission of the final paper.

The mathematics seminars, numbered MATH 4800 through 4890, fulfill the senior requirement. For philosophy seminars that fulfill the senior requirement, consult the director of undergraduate studies (DUS) in Philosophy.

**Credit/D/Fail** No more than one course taken Credit/D/Fail may be applied toward the requirements of the major (including the prerequisite), with permission of the DUSs. The following courses must be taken for letter grades: MATH 2700, PHIL 2267,

PHIL 4427; the required mathematics courses level 2220 or higher; the additional philosophy course with an advanced logic component; and the senior seminar.

**Outside credit** Courses taken after matriculation at Yale at another institution or during an approved summer or term-time study abroad program may count toward the major requirements with DUS approval.

#### ADVISING

A typical program satisfying the major might consist of MATH 1200, 2250 or 2260, 2700, 2550, two math electives level 2220 or higher; PHIL 1126, 2267, 4427, two philosophy electives; a senior seminar in Mathematics or Philosophy.

### SUMMARY OF MAJOR REQUIREMENTS

**Prerequisite** MATH 1200

**Number of courses** 12 term courses (incl prereq and senior sem)

**Specific courses required** MATH 2700, PHIL 2267, 4427

**Distribution of courses** 3 additional courses in MATH at 2220 level or higher; 3 additional courses in PHIL, incl 1 PHIL course with adv logic component; 1 math or philosophy elective

**Substitution permitted** MATH 3020 for MATH 1200

**Senior requirement** Senior seminar in philosophy or MATH 4800 through 4890