Quarter to Semester Equivalent Classes

Equivalent Classes

MATH 202 (Orientation to Mathematics Major) ≡ MATH 2001 (Mathematics Orientation)

MATH 206 (Linear Algebra I) ≡ MATH 1151 (Linear Algebra)

MATH 241 (Calculus IV) ≡ MATH 2263 (Calculus III)

MATH 242 (Differential Equations I) ≡ MATH 2343 (Differential Equations)

MATH 248 (Methods of Proof in Math.) ≡ MATH 2031 (Transition to Advanced Math.)

MATH 300 (Technology in Math. Education) ≡ MATH 3971 (Technology in Math. Education)

MATH 334 (Combinatorial Math) ≡ MATH 3051 (Combinatorics I)

MATH 335 (Graph Theory) ≡ MATH 3055 (Graph Theory)

MATH 341 (Theory of Numbers) ≡ MATH 3111 (Number Theory)

MATH 344 (Linear Analysis II) ≡ MATH 3351 (Diff. Equ. and Boundary Value Problems)

MATH 350 (Mathematical Software) ≡ MATH 3681 (Mathematical Programming)

MATH 351 (Typesetting with LaTex) ≡ MATH 3680 (Typesetting with LaTex)

MATH 370 (Putnam Exam Seminar) ≡ MATH 3370 (Putnam Exam Seminar)

MATH 371 (Math Modeling Seminar) ≡ MATH 3371 (Math Modeling Seminar)

MATH 404 (Intro. to Differential Geometry) ≡ MATH 4531 (Differential Geometry)

MATH 410 (Complex Analysis I) ≡ MATH 3301 (Complex Analysis)

MATH 416 (Differential Equations II) ≡ MATH 4342 (Nonlinear Dynamical Systems)

MATH 418 (Partial Differential Equations) ≡ MATH 4352 (Partial Differential Equations)

MATH 419 (Intro. to the History of Mathematics) ≡ MATH 3011 (History of Mathematics)

MATH 423 (Advanced Math. for Teaching) ≡ MATH 4972 (Advanced Math. for Teaching)

MATH 435 (Discrete Mathematics with Applications I) ≡ MATH 4052 (Combinatorics II)

MATH 437 (Game Theory) ≡ MATH 4911 (Game Theory)

MATH 440 (Topology I) ≡ MATH 4541 (Introduction to Topology)

MATH 442 (Euclidean Geometry) ≡ MATH 3511 (Euclidean Geometry)

MATH 443 (Modern Geometries) ≡ MATH 4512 (Non-Euclidean Geometry)

MATH 451 (Numerical Analysis I) ≡ MATH 3651 (Introduction to Numerical Analysis)

MATH 452 (Numerical Analysis II) ≡ MATH 4652 (Numerical Differential Equations)

MATH 453 (Numerical Optimization) ≡ MATH 4653 (Numerical Optimization)

MATH 459 (Senior Project Seminar) ≡ MATH 4463 (Senior Project Seminar)

MATH 460 (Senior Project Applied Seminar) ≡ MATH 4464 (Senior Project Applied Seminar)

MATH 461 (Senior Project I) ≡ MATH 4461 (Senior Project I)

MATH 462 (Senior Project II) ≡ MATH 4462 (Senior Project II)

MATH 475 (Adv. Topics in Mathematics) ≡ MATH 4981 (Adv. Topics in Mathematics)

MATH 476 (Adv. Topics in Applied Math.) ≡ MATH 4982 (Adv. Topics in Applied Math.)

Connected Sequences

MATH 141/142/143 (Calculus I/II/III) ≡ MATH 1261/1262 (Calculus I/II)

MATH 244 (Linear Analysis I) < MATH 2341 (Linear Analysis)

MATH 306 (Linear Algebra II) < MATH 3152 (Advanced Linear Algebra)

MATH 412/413/414 (Real Analysis I/II/III) ≡ MATH 4264/4265 (Analysis I/II)

MATH 481/482/483 (Abstract Algebra I/II/III) ≡ MATH 4201/4202 (Abstract Algebra I/II)

Quarter Courses Not Offered Under Semesters

MATH 304 (Vector Analysis)

MATH 406 (Linear Algebra III)

MATH 411 (Complex Analysis II)

New Courses Under Semesters

MATH 2621 (Introduction to Mathematical Optimization)

MATH 3622 (Mathematics of Data Science)

Tentative Semester BS in Mathematics (66 - 70 Major Units)

1. Core Requirements (46 - 48 Major Units, 10 GE Units)

   MATH 1151: Linear Algebra (3 Units)

   MATH 1261: Calculus I (4 Units)

   MATH 1262 or MATH 1263: Calculus II or Bridge Calculus II (2 or 4 Units)

   MATH 2001: Orientation to Mathematics (1 Unit)

   MATH 2031: Transition to Advanced Mathematics (3 Units)

   MATH 2263: Calculus III (3 Units, 241)

   MATH 2343: Differential Equations (3 Units)

   MATH 3152: Advanced Linear Algebra (4 Units)

   MATH 4201: Abstract Algebra I (4 Units)

   MATH 4264: Real Analysis I (4 Units)

   CSC 1001/1001L: Fundamentals of Computer Science (4 Units)

   PHYS 1141: General Physics I (4 Units)

   STAT 1510: Statistics I (3 Units)

   MATH 4202 or MATH 4265 (3 or 4 Units)
   Abstract Algebra II or Real Analysis II

   MATH 3051 or MATH 3111 or MATH 3301 (3 Units)
   Combinatorics I, or Number Theory, or Complex Analysis

   CSC 2001/2001L or CSC 2600 or STAT 2610 or MATH 3681 or PHYS 4202 (3 or 4 units)
   Data Structures, or Computing with Data, or Introduction to Probability and Simulation, or Mathematical Programming, or Computational Physics

   MATH 4461/4462 or MATH 4463 or MATH 4464 (3 Units)
   Senior Project Seminar, or Senior Project Applied Seminar, or Senior Project I/II

2. Complete one of the following tracks. At least 3 classes must be at the 4000 level or higher. At most 1 class can be below the 3000 level. At most 2 classes can have a non-MATH prefix. Courses can't appear anywhere else in the major. (21 - 23 Units)

   (a) General Track: Choose 7 classes from List A.

   (b) Applied Track: Choose 3 classes from list B and 4 classes from list A.

   (c) Teaching Track: Choose 4 classes from list C and 3 classes from list A.

3. Free Electives (6 - 10)

List A: General Mathematics Electives

1. MATH 3011: History of Mathematics (3 Units, 419)
2. MATH 3051: Combinatorics I (3 Units, 334, Upper Division GE)
3. MATH 3055: Graph Theory (3 Units, 335)
4. MATH 3111: Number Theory (3 Units, 341, Upper Division GE)
5. MATH 3301: Complex Analysis (3 Units, 410/411, Upper Division GE)
6. MATH 3351: Differential Equations and Boundary Value Problems (3 Units, 344)
7. MATH 3511: Euclidean Geometry (3 Units, 442)
8. MATH 3622: Mathematics of Data Science (3 Units, Data Science Math Elective)
9. MATH 3651: Introduction to Numerical Analysis (3 Units, 451)
10. MATH 3681: Mathematical Programming (3 Units, 350)
11. MATH 4052: Combinatorics II (3 Units, 435/436)
12. MATH 4202: Abstract Algebra II (3 Units, 482/483)
13. MATH 4265: Real Analysis II (4 Units, 413/414)
14. MATH 4342: Nonlinear Dynamical Systems (3 Units, 416)
15. MATH 4352: Partial Differential Equations (3 Units, 418)
16. MATH 4461/4462: Senior Project I/II (3 Units, 461/462)
17. MATH 4512: Non-Euclidean Geometry (3 Units, 443)
18. MATH 4531: Differential Geometry (3 Units, 404)
19. MATH 4541: Introduction to Topology (3 Units, 440)
20. MATH 4652: Numerical Differential Equations (3 Units, 452)
21. MATH 4653: Numerical Optimization (3 Units, 453)
22. MATH 4911: Game Theory (3 Units, 437)
23. MATH 4981: Advanced Topics in Mathematics (3 Units, 475)
24. MATH 4982: Advanced Topics in Applied Mathematics (3 Units, 476)
25. CPE/PHYS 3345, Quantum Computing (3 units, CPE/PHYS 345)
26. CSC 3449, Algorithms and Complexity (4 units, CSC 349)
27. CSC 3665, Introduction to Database Management Systems (4 units, CSC 365)
28. DATA 4610, Fundamentals of Machine Learning (4 units, DATA 402)
29. DATA 4620, Foundations and Applications of Deep Learning (4 units, new course)

30. ECON 3030, Intermediate Microeconomics (4 units, ECON 311)
31. ECON 4010, Mathematical Economics (3 units, ECON 408)
32. ECON 4012, Probability Models for Economic Decisions (3 units, ECON 409)
33. ENGR 2211, Introduction to Mechanics (4 units, ME 211)
34. ME 3302, Thermodynamics (3 units, ME 302)
35. ME 3318, Mechanical Vibrations (4 units, ME 318)
36. ME 3341, Fluid Mechanics (3 units, ME 341)
37. PHYS 1143, General Physics II (4 units, PHYS 142/143)
38. PHYS 3301, Statistical Mechanics I (3 units, PHYS 301)
39. PHYS 3305, Classical Mechanics I (3 units, PHYS 305)
40. PHYS 3306, Classical Mechanics II (3 units, PHYS 306)
41. PHYS 3314, Ocean Dynamics (3 units, PHYS 314)
42. PHYS 3323, Optics (4 units, PHYS 323)
43. PHYS/CPE 3345 Quantum Computing (3 units, PHYS/CPE 345)
44. PHYS 4408, Electromagnetic Fields and Waves I (3 units, PHYS 408)
45. PHYS 4425, Solid State Physics (4 units, PHYS 425)
46. STAT 3520 Statistics II (3 units, STAT 302)
47. STAT 3530, Applied Linear Models (4 units, STAT 334)
48. STAT 4610, Probability Theory (3 units, STAT 425)
49. STAT 4620, Statistical Theory (3 units, STAT 426)
50. STAT 4750, Bayesian Reasoning and Methods (3 units, STAT 415)
51. STAT 4770, Survival Analysis Methods (3 units, STAT 417)
52. STAT 4790, Applied Multivariate Statistics (3 units, STAT 419)

List B: Applied Mathematics Electives

1. MATH 3055: Graph Theory (3 Units, 335)
2. MATH 4342: Nonlinear Dynamical Systems (3 Units, 416)
3. MATH 4352: Partial Differential Equations (3 Units, 418)
4. MATH 4652: Numerical Differential Equations (3 Units, 452)
5. MATH 4653: Numerical Optimization (3 Units, 453)
6. MATH 4911: Game Theory (3 Units, 437)

List C: Teaching Mathematics Electives

1. MATH 3511: Euclidean Geometry (3 Units, 442)
2. MATH 3971: Technology in Mathematics Education (3 Units, 300)
3. MATH 4512: Non-Euclidean Geometry (3 Units, 443)
4. MATH 4972: Advanced Mathematics for Teaching (3 Units, 423)