Teaching Record Summary (1990-2026)

Overview

This analysis covers 36 years of teaching at UNCW, including courses in Mathematics, Physics, Marine Science, Honors, and Computer Science.

Administrative Roles

- **Assistant Chair/Undergraduate Coordinator** (Mathematics & Statistics): 2020-2026 (6 years)
- **Interim Chair** (Mathematics & Statistics): August 2019 - July 2020
- **Department Chair** (Physics and Physical Oceanography): Fall 2009 - Fall 2011 (2 years)
- **Editor-in-Chief**, The Journal of Effective Teaching: 2006 - Spring 2017 (11 years)
- **CTE Faculty Associate**: 1997 onwards (multiple decades)

Course Teaching Statistics

Mathematics Courses

Course	Times Taught	Notes
MAT 111 (College Algebra)	11	Including 2-section semesters
MAT 112 (Trigonometry)	4	
MAT 152 (Basic Calculus)	3	
MAT 162 (Calculus)	14	5 hrs/week; includes MCP Project implementation
MAT 261 (Multivariate Calculus)	9	5 hrs/week
MAT 325 (Computational Mathematics)	1	
MAT 346	7	
MAT 361 (Differential Equations)	11	
MAT 365 (Advanced Calculus I/Vector Calculus)	11	
MAT 366 (Advanced Calculus II)	1	
MAT 367 (Principles in Applied Math)	11	Compiled textbook for this course
MAT 415/515 (Complex Variables)	2	
MAT 516 (Complex Analysis II)	2	Only taught twice at UNCW

Course	Times Taught	Notes
MAT 418/518 (Applied Analytical Methods I/PDE I)	8	
MAT 419/519 (Applied Analytical Methods II/PDE II)	9	
MAT 425/525 (Numerical Analysis I)	3	Including DIS
MAT 451/551 (Topology)	1	
MAT 463/563 (Ordinary Differential Equations)	6	
MAT 475/564 (Nonlinear Dynamical Systems and Chaos)	5	Cross-listed course
MAT 491 (Perturbation Methods)	1	DIS
MAT 495 (Senior Seminar)	30+	Both individual/group projects and taught as course
MAT 499 (Honors Work)	15+	Multiple honors theses supervised
MAT 531 (Linear Algebra)	1	Graduate level
MAT 591 (DIS courses)	5+	Various topics including Topology, Complex Analysis II, Stellar Evolution
MAT 599 (Thesis Work)	25+	Multiple master's theses supervised

Physics Courses

Course	Times Taught	Notes
PHY 101 (Elementary Physics I)	20+	60-75 students; often overload
PHY 102 (Elementary Physics II)	25+	60-75 students; often overload
PHY 201 (General Physics I)	7	4 hrs + labs
PHY 202 (General Physics II)	6	4 hrs + labs; developed lab manuals
PHY 311 (Mathematical Physics)	5	4 hrs/week; wrote lecture notes (300+ pages)
PHY 335 (Modern Physics)	4	Including DIS offerings
PHY 411 (E&M I)	1	
PHY 412 (E&M II)	2	

Course	Times Taught	Notes
PHY 444 (Quantum Mechanics)	12	4 hrs/week
PHY 445 (Optics)	2	
PHY 455 (Thermal Physics)	1	
PHY 490 (Topics Courses)	7+	General Relativity (3x), Cosmology (2x), Black Holes (1x), Astrophysics & Cosmology (1x)
PHY 491 (DIS)	5+	Various topics: Black holes, Nonlinear Waves, General Relativity, Nonlinear Physics, Circuits
PHY 495 (Senior Seminar)	30+	Individual and group projects
PHY 499 (Honors Work)	15+	Multiple honors theses
PHY 591 (DIS)	3+	Underwater Acoustics and Signal Processing

Other Courses

- **MSC 591** (Marine Science DIS): 4+ offerings - Signal Processing, Fourier Analysis, Underwater Acoustics
- **HON 110**: 1 (Chaos - Team Taught)
- **HON 120**: 1 (First Three Minutes of the Universe)
- **HON 210**: 5 (Einstein's Legacy, Interstellar 2x, Mathematical Puzzles, Cosmic Origins)
- **CSC 105**: 1 (Introduction to Computing)
- **SCI 501/502**: 2 (Team taught graduate Natural Sciences courses, 5 hrs/week)
- **MAE 573/574**: 2 (NC State modeling class collaboration)

Laboratory Instruction

- **PHY 101 Labs**: 40+ lab sections taught
- **PHY 102 Labs**: 40+ lab sections taught
- **PHY 201 Labs**: 10+ sections
- **PHY 202 Labs**: 10+ sections
- Developed two lab manuals (used by multiple professors for several years)
- Wrote software for Physics Labs

Student Projects and Supervision

Doctoral/Master's Theses (MAT 599)

At least **8-10 completed master's theses**, including topics on:

- Quantum computation and Quantum Fourier Transform
- Knot theory and knot invariants
- Geometry of Bloch Sphere
- Asymptotics, trans-series, and resurgence
- Neuron modeling
- Hidden Markov models

Honors Theses (MAT 499, PHY 499)

At least **15-20 honors theses** supervised, including:

- Black holes and chaos
- Gravitational waves
- Symmetries and Dirac's Equation
- Lattice Boltzmann Method
- Gravity changes due to internal dislocation in spherical Earth
- Various physics topics (Minges, Corak)

Senior Seminars and Individual Projects (MAT 495, PHY 495)

60+ individual and group projects supervised across both mathematics and physics, including:

Recent Notable Projects (2020s):

- Analyzing Chevron Nozzles for Jet Noise Reduction
- Deriving and Applying Geodesics and Time Dilation in Extreme Gravitational Fields
- From Coexistence to Dominance in Gacha Games
- Mathematical Induction: History and Applications
- Great Walls of Water: Rogue Waves
- Application of Bessel Functions to Cylindrical Waveguides
- Quantum Computing
- Evolutionary Stability in Predator-Prey Dynamics

- Circular Restricted Three Body Problem
- Quaternionic Representation of Spinors
- History and Physics of General Relativity and Gravitational Waves
- Tidal Decomposition Using Fourier Transform
- Figure Eight Knot Complement
- Physics of Photovoltaic Effect and Solar Energy Efficiency
- Emden-Fowler Equation and nonlinear dynamics

Earlier Projects:

- Chua circuit, GPS, space weather
- Tracking a soccer ball, dark matter and lensing
- Optimization in game theory
- Chladni plates
- Numerical integration of Whitham's F-Curve
- Wormholes, Path Integrals
- Gauge theory, Helmholtz resonators
- Applications of chaos
- And many more

Directed Independent Studies (DIS)

20+ DIS courses offered to individual or small groups of students on specialized topics:

- Topology
- Complex Analysis II
- Nonlinear Physics (for 2 students)
- General Relativity and Geodesics
- Black hole thermodynamics
- Numerical Methods for Conservation Laws
- Linear and Nonlinear Waves (Whitham's theory)
- Nonlinear circuits

- Underwater Acoustics and Signal Processing (multiple offerings)
- Modern Physics
- Mathematical Physics
- Perturbation theory
- Finite difference methods for PDEs
- And others

Special Courses and Initiatives

Course Development

- **Earth Algebra** (1994): Introduced for College Algebra teaching, focusing on greenhouse effect and CO2 emissions
- **First Online Mathematics Course** (1998): Co-developed UNCW's first online math course
- **Mathematical Physics Text**: Wrote 300+ pages of lecture notes (later edited to book manuscript with solutions manual)
- **MAT 367 Textbook**: Compiled textbook for Principles in Applied Math
- **Physics Lab Manuals**: Wrote two lab manuals used by multiple professors

Special Programs

- **Summer Ventures**: 5+ years teaching/co-teaching courses in Computer Applications in Physics and Mathematical Modeling
- **MCP Project** (1992-1997): NSF-supported project using computers in teaching math, physics, and chemistry; continued for 5 years in MAT 161-162
- **Web Course Development Team Leader** (2001-2002): Led biweekly faculty training workshops
- **Tablet PC Initiative** (2008): HON 120 course as part of initiative
- **CUAS Students**: Taught multiple classes with 7-8 CUAS students integrated

Teaching Load Notes

Overload Teaching

- "Worked a fairly solid overload schedule for over a decade"
- Several semesters of overload teaching without pay
- Heavy summer schedule for several years

- PHY 101-102 classes: typically 60-75 students
- Course release for CTE Faculty Associate "effectively cancelled by additional courses in physics"

Research Reassignments

- Spring 2012: Research Reassignment (used to submit book and solutions manual on Mathematical Physics)

No Summer Teaching Periods

- Several summers during Department Chair position (2009-2011)

Unique Contributions

1. **First Courses at UNCW**:
   - General Relativity (PHY 490, 2006) - never taught before at UNCW
   - Complex Analysis II (MAT 516) - only taught twice while at UNCW
2. **Cross-Listed Courses**: Multiple courses offered at both undergraduate and graduate levels
3. **Interdisciplinary Teaching**:
   - Mathematics courses
   - Physics courses
   - Marine Science courses
   - Honors seminars
   - Team-taught Natural Sciences
4. **Sustained Service**: Continuous teaching from 1990-2026 with minimal gaps, even while serving in administrative roles

Summary Statistics

- **Total Years Teaching**: 36 years (1990-2026)
- **Different Courses Taught**: 50+ distinct courses
- **Total Course Offerings**: 400+ individual course sections
- **Student Projects Supervised**: 100+ (including theses, honors projects, senior seminars, and DIS)
- **Lab Sections**: 100+ physics lab sections taught
- **Administrative Service**: 15+ years in various leadership roles

Notable Patterns

1. **Consistency**: Regular teaching of core courses (MAT 367, MAT 365, PHY 444, MAT 361) throughout career
2. **Flexibility**: Taught across all levels from introductory to graduate courses
3. **Innovation**: Developed new courses, materials, and teaching methods
4. **Student Mentorship**: Extensive one-on-one work with students through DIS, theses, and projects
5. **Interdisciplinary**: Bridged mathematics, physics, and marine science
6. **Service During Leadership**: Maintained substantial teaching loads even while serving as department chair