Courses Taught 1990-2023

Year	Spring	Fall	Summer
2023 Assistant Chair/Undergraduate Coordinator[1]	MAT 367 MAT 495[2] PHY 495[3]	MAT 346 PHY 490[4] HON 210[5]	None
2022 Assistant Chair/Undergraduate Coordinator	MAT 325 MAT 495[6] MAT 499[7] MAT 591[8] MAT 599[9] MAT 600[10] PHY 495[11]	MAT 346 MAT 499 MAT 600[12] PHY 444 HON 210[13]	None
2021 Assistant Chair/Undergraduate Coordinator	MAT 361 MAT 495[14] MAT 519 MAT 599 PHY 490[15] PHY 499	MAT 346 MAT 599 PHY 444	None
2020 Assistant Chair/Interim Chair[16]	MAT 451/551 MAT 491[17] MAT 495 MAT 599 (2) Interim Chair[18]	MAT 346 MAT 418/518 MAT 495 MAT 599[19] PHY 444 PHY 499[20] HON 210[21]	Interim Chair
2019 Assistant Chair/Interim Chair[22]	MAT 162 MAT 495[23] PHY 495[24]	MAT 346 MAT 495[25] MAT 599 (2)[26]	PHY 102 PHY 102 Lab MAT 361

[1]Assistant Chair/Undergraduate Coordinator, Mathematics & Statistics for academic years 2020-2023.
[2] Oversaw group project, *The Circular Restricted Three Body Problem and Applications to Astrodynamics*.
[3] Seminar class plus supervised two projects, *Quaternionic Representation of Spinors Utilizing Quaternions to Describe Spinors and Entanglement* and *Exploration of the History and Physics of General Relativity and Gravitational Waves.*
[4] Topics course, *Astrophysics and Cosmology*.
[5] Honors course, *Cosmic Origins*.
[6] Oversaw group project, *Tidal Decomposition Using Fourier Transform*.
[7] Honors Project in Knot Theory, *The Figure Eight Knot Complement*.
[8] Independent study on Stellar Evolution.
[9] M.S. thesis on quantum computation, *The Quantum Fourier Transform And Quantum Computation*.
[10] Continuation of thesis on Knot theory, *An Investigation Of The Writings Of Gauss, Tait, And Alexander On Knots*.
[11] Seminar class plus supervised project, *The Physics of The Photovoltaic Effect and The Efficiency of Solar Energy*.
[12] Finishing previous two masters theses.
[13] Honors course, *The Joy of Mathematical Puzzles and Games*.
[14] Project on Emden-Fowler Equation and nonlinear dynamics.
[15] New course on *The Physics of Black Holes*.
[16]Interim Chair Spring and Summer. Assistant Chair/Undergraduate Coordinator, in Fall.
[17] DIS for two students in nonlinear physics.
[18] Interim Chair of Mathematics and Statistics August 2019-July 2020.
[19] Beginning of thesis on knot invariants.
[20]PHY 499 Beginning Honors Thesis on Black Holes and Chaos, to complete Spring 2018.
[21] This was an honors course entitled *The Physics of Interstellar*.
[22]Interim Chair Fall. Assistant Chair/Undergraduate Coordinator, in Spring and Summer.
[23] Project on applications of chaos.
[24] Taught 17 in seminar course and oversaw 5 individual student projects on Chua circuit, GPS, space weather, tracking a soccer ball, dark matter and lensing.
[25] Project on Optimization in game theory.

Courses Taught 1990-2023

Year	Spring	Fall	Summer
	MAT 499 (2) MAT 599(3)	PHY 444 Interim Chair	Interim Chair
2018 **Assistant Chair/Undergraduate Coordinator**[27]	MAT 367 MAT 475/564[28] MAT 495[29] PHY 490[30] PHY 499	MAT 361 MAT 365 MAT 495[31] MAT 499 (2)[32] MAT 599 (3)[33] PHY 444	PHY 102 PHY 102 Lab MAT 361
2017 **Assistant Chair/Undergraduate Coordinator** JET Editor[34]	MAT 367 MAT 516 PHY 102 PHY 491[35] PHY 495[36] MAT 599[37]	MAT 261 MAT 518 PHY 444 PHY 499[38]	PHY 102 PHY 102 Lab MAT 361
2016 **Assistant Chair/Undergraduate Coordinator** JET Editor	MAT 367 PHY 102 PHY 491[39], PHY 491[40] PHY 495[41] PHY 499[42]	MAT 365 MAT 515 MAT 499 MAT 599 PHY 444 PHY 495 PHY 499	PHY 102 PHY 102 Lab MAT 361
2015 **Interim Assistant Chair/Undergraduate Coordinator**[43] CTE Faculty Associate[44] JET Editor	MAT 367 MAT 495 MAT 519 PHY 490[45] PHY 495	MAT 365 PHY 444 PHY 491[46]	PHY 102 PHY 102 Lab MAT 361
2014 CTE Faculty Associate JET Editor	MAT 367 MAT 495 PHY 455 PHY 495	MAT 495 MAT 518 PHY 444 PHY 491[47]	PHY 102 PHY 102 Lab MAT 361

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[26] One student continuing thesis on asymptotics, trans-series, and resurgence and a second on the hidden Markov model.
[27]Assistant Chair/Undergraduate Coordinator, Mathematics & Statistics for academic year 2016-2019.
[28] This was a cross listed course on Nonlinear Dynamical Systems and Chaos.
[29] Project on numerical integration of Whitham's F-Curve.
[30]Topics course: Introduction to General Relativity and Cosmology.
[31] Project on Chladni plates.
[32]MAT 499 Beginning Honors Theses – one on Lattice Boltzmann Method and the other on Gravity Changes due to Internal Dislocation in a Spherical Earth, to complete Spring 2019.
[33] Three masters theses: quantum computing, neuron modeling, and a thesis on asymptotics, trans-series, and resurgence.
[34] Editor-in-Chief, The Journal of Effective Teaching, from 2006 - Spring 2017.
[35]DIS on Nonlinear circuits.
[36]PHY 495 – These are directed senior seminars, typically of an individual student. This semester I directed two students in physics: One on Wormholes and the other on Path Integrals.
[37] Completed Masters' Thesis on Geometry of Bloch Sphere.
[38]PHY 499 Beginning Honors Thesis on Symmetries and Dirac's Equation, to complete Spring 2018.
[39]DIS on Linear and Nonlinear Waves, specifically on Whitham's theory on supersonic flow.
[40]DIS on General Relativity: Geodesics near black holes.
[41]PHY 495 – These are directed senior seminars, typically of an individual student. This semester I directed two students in physics: One on gauge theory and the other on Helmholtz resonators.
[42]PHY 499 Beginning Honors Thesis on Gravitational Waves, completed Fall 2016.
[43]Interim Assistant Chair/Undergraduate Coordinator, Mathematics & Statistics for academic year 2015-2016.
[44]CTE Faculty Associate from 1997 until present. A course release was part of the assignment for several semesters thru Spring 2002, though this was effectively cancelled by additional courses in physics.
[45]Topics course: Introduction to General Relativity and Cosmology.
[46]DIS on General Relativity leading to proposal for Honors thesis.

Courses Taught 1990-2023

Year	Spring	Fall	Summer
2013 CTE Faculty Associate JET Editor	MAT 367 MAT 495 PHY 102 PHY 495 MAT 491[48]	MAT 365 MAT 495 PHY 101	PHY 102
2012 **Assistant Chair**[49] CTE Faculty Associate JET Editor	MAT 367 PHY 311 PHY 495[50] MAT 495[51] MAT 599	Research Reassignment[52]	None[53]
2011 **Department Chair**[54] CTE Faculty Associate JET Editor	PHY 311 PHY 495 MAT 495	MAT 365 PHY 445 PHY 495 MAT 495 MAT 599	None, Dept Chair
2010 **Department Chair** CTE Faculty Associate JET Editor	MAT 367 PHY 499 PHY 495	MAT 495 PHY 335 PHY 490[55] PHY 495 PHY 499 MAT 599	None, Dept. Chair
2009 **Department Chair** CTE Faculty Associate JET Editor	MAT 261 MAT 495 PHY 445 PHY 495[56]	MAT 365[57] MAT 599 PHY 101 PHY 499[58]	PHY 201 PHY 101/201 Labs - 3[59]
2008[60] CTE Faculty Associate JET Editor	MAT 261 MAT 367 MAT 495 PHY 490[61] MAT 599 PHY 495[62]	MAT 261 MAT 463/563 MAT 495 MAT 599 HON 120[63]	PHY 201 PHY 101/201 Labs - 3 Summer Ventures[64]
2007 CTE Faculty Associate JET Editor	MAT 261 MAT 415 MAT 495	MAT 162 MAT 463/563 MAT 495	PHY 101 PHY 101/201 Labs - 3

[47]DIS on black hole thermodynamics.
[48]DIS on Numerical Methods for Conservation Laws.
[49] Spent one semester as assistant chair and one semester on a Research Reassignment.
[50] PHY 495 – These are directed senior seminars, typically of an individual student. This semester I directed two students in physics.
[51] MAT 495 – These are directed senior seminars, typically of an individual student. This semester I directed three students.
[52] Used this time to submit book and solutions manual on Mathematical Physics.
[53] Did not teach summer classes several years because of Department Chair position.
[54] Chair, Department of Physics and Physical Oceanography, Fall 2009- Fall 2011.
[55] This was Introduction to Cosmology as a topics course.
[56] PHY 495 – These are directed senior seminars, typically of an individual student. This semester I directed two students in physics.
[57] This will be my first semester as Chair, Department of Physics and Physical Oceanography.
[58] Directed two honors student projects in physics, Minges (May 2010) and Corak (Dec 2010).
[59] All physics labs are two hours each. The number indicates the number of labs in each session.
[60] It should be noted that for over a decade I worked a fairly solid overload schedule. This included a course replacement for my position as Faculty Associate as described in another footnote and several semesters of overload teaching without pay until more recently. Also, my summer schedule was quite heavy for several years. The PHY 101-102 classes have been relatively large classes with 60-75 students.
[61] This is a course on General Relativity.
[62] PHY 495 – These are directed senior seminars, typically of an individual student.
[63] This is a one hour seminar course, entitled "The First Three Minutes of the Universe". It is part of a Tablet PC Initiative.
[64] This Summer Ventures Class will be in mathematical modeling.

Courses Taught 1990-2023

Year	Spring	Fall	Summer
	MAT 599	PHY 321	
2006 CTE Faculty Associate JET Editor	MAT 152 MAT 367 MAT 419/519 PHY 490[65] PHY 495[66] MAT 599	MAT 162 MAT 475/564[67] PHY 311 MAT 599[68] PHY 495	PHY 101 PHY 101/201 Labs – 3 PHY 335[69]
2005 CTE Faculty Associate	MAT 152 MAT 367[70] MAT 463/563 PHY 102[71]	MAT 365 MAT 418/518 PHY 311[72] HON 210[73] MAT 599	PHY 101 PHY 101/201 Labs - 3 MAT 599
2004 CTE Faculty Associate	MAT 111 MAT 361 MAT 419/519 PHY 102 PHY 495[74]	MAT 111 MAT 365 MAT 425/525 PHY 101 MSC 591[75]	PHY 101 PHY 101/201 Labs – 3 PHY 335[76]
2003 CTE Faculty Associate	MAT 111 MAT 361 MAT 367 PHY 102 MSC 591[77]	MAT 111 MAT 365 MAT 418/518 PHY 101	PHY 101 PHY 101/201 Labs – 3 PHY 335[78] PHY 491[79]
2002 CTE Faculty Associate WCDT2002 Leader[80]	MAT 419/519 PHY 102 PHY 102 Lab PHY 102 Hon. Contract[81] MAE 574[82]	MAT 111 MAT 261 MAT 361 PHY 101 MSC 591[83]	PHY 101 PHY 101 Labs - 3

[65] This was a course on General Relativity, which has never been taught at UNCW.
[66] For this semester I had two senior seminar students.
[67] This was a cross listed course on Nonlinear Dynamical Systems and Chaos.
[68] Two graduate students began their studies under me.
[69] Modern Physics DIS.
[70] I taught this course and compiled a textbook for the class in the process. I taught it in the Spring so that I could edit the text and try to get it published at some point.
[71] For many semesters these physics classes are overloads typically with 60-75 students.
[72] This is the first time I taught Mathematical Physics other than as a DIS. While there are several texts on the market, few if any are suitable for undergraduate texts at the sophomore-junior level. So, I wrote up my lectures and posted them for students to use with the reference text that I had ordered. The text (the first 300 pages due to a loss in about 80 pages.) was edited in August 2006
[73] This is a course on the legacy of Albert Einstein in celebration of the centennial of his famous papers on relativity, Brownian motion, the photoelectric effect and his most famous $E = mc^2$. Due to the variety of backgrounds, this has proven to be one of the most difficult classes to teach while at the same time being fun. This seminar course is a mix of science, history and philosophy.
[74] For this semester I had two senior seminar students.
[75] Marine Science DIS in Signal Processing for Oceanography for one graduate student in the MSC Program. The class included Tidal Analysis and Matlab programming.
[76] Modern Physics DIS.
[77] Marine Science DIS in Signal Processing for Oceanography for two graduate students in the MSC Program involving 2-3 hours of lecture per week plus writing notes and doing MATLAB work.
[78] Modern Physics DIS.
[79] Mathematical Physics DIS for non-UNCW student..
[80] A Team Leader for two years on Web Course Development Team, which involved teaching faculty biweekly from March thru June 2001-2002 and meeting on off weeks to organize two-hour plus workshops.
[81] Made contract with one student to do extra research outside class for credit as Honor's course.
[82] Attended NC State modeling class and helped students/Dr. Lugo with Matlab projects.

Courses Taught 1990-2023

Year	Spring	Fall	Summer
2001 CTE Faculty Associate WCDT2001 Leader	MAT 419/519 PHY 412 PHY 202[84] PHY 591[85] MAT 463[86]	MAT 418/518 PHY 101 PHY 444[87] MAE 573	PHY 101 PHY 101 Labs - 3 MAT 599[88] Summer Ventures[89]
2000 CTE Faculty Associate	MAT 463/563 PHY 412 PHY 202 Lab MAT 499[90] PHY 499 MAT 526[91] PHY 495	MAT 518 PHY 411 PHY 444 PHY 591[92]	PHY 101 PHY 101 Labs - 3 Summer Ventures
1999 CTE Faculty Associate	MAT 419/519 PHY 202[93] PHY 202 Lab	MAT 475/564 PHY 201 PHY 201 Lab MAT 425[94] MAT 499	PHY 101 PHY 101 Labs - 2 PHY 102 PHY 102 Labs - 2
1998 CTE Faculty Associate	MAT 261 PHY 202 PHY 202 Lab SCI 502[95] MAT 111[96]	MAT 418/518 PHY 201 PHY 201 Lab CSC 105[97]	PHY 101 PHY 101 Labs - 2 PHY 102 PHY 102 Lab
1997	MAT 261 MAT 361 PHY 202 PHY 202 Lab	MAT 261 MAT 475/564[98] PHY 201 PHY 201 Lab SCI 501[99]	PHY 101 PHY 101 Labs – 2.5 PHY 102 PHY 102 Lab
1996	MAT 162 MAT 367 MAT 463/563 HON 110[100]	MAT 261 MAT 361 PHY 201 PHY 201 Lab	PHY 101 PHY 101 Labs – 2 PHY 102 PHY 102 Lab
1995	MAT 111[101]	MAT 111	Summer Ventures

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[83] Fourier Analysis of Time Series, given to two MSC graduate students with a 2-3 hour lecture each week and posted lecture notes.
[84] All PHY 201-2 classes met four hours per week for lecture plus one hour per week Q&A.
[85] Underwater Acoustics and Signals, a DIS for a Biology Graduate Student, met once a week for 1-2 hours plus extra work related to thesis research.
[86] DIS conducted class. Met with student at least one hour each week and gave standard exams.
[87] All 400 level physics courses required as much preparatory work as any MAT graduate class.
[88] Under this descriptor, three graduate students completed and defended their theses.
[89] Summer Ventures Course in Computer Applications in Physics – A course developed in 1994 by Dr. Lugo and myself. I co-taught it four times and volunteered one summer.
[90] MAT 499 and PHY 499 – Honors Courses leading to honors theses for two of our majors.
[91] DIS for graduate student studying finite difference methods for solution of partial differential equations.
[92] Underwater Acoustics and Signals, a DIS for a Biology Graduate Student, met once a week for 1-2 hours plus extra work related to thesis research.
[93] During 1998-1999 I was in charge of the labs, wrote two lab manuals and some software for the Physics Labs. All summer labs listed used the lab manual. The lab manual was developed in 1995 and used for several years in PHY 201-202 and 101-102 by several professors.
[94] DIS for undergraduate student.
[95] Second half of a team taught graduate course in Natural Science which met 5 hours per week.
[96] Proposed and co-developed the first online mathematics course in 1998. Though not the instructor of record, had substantial input from its inception to its delivery.
[97] This class was listed as a Technology College Course.
[98] This was a special topics course in Dynamical Systems and Chaos and was also taught in 1999.
[99] First half of a team taught graduate course in Natural Science which met 5 hours per week. Planning for this course took place in the Spring over a period of a couple of months.
[100] Team taught honors course on Chaos, led by Harry Smith.

Courses Taught 1990-2023

Year	Spring	Fall	Summer
	MAT 162 MAT 516[102]	MAT 162 MAT 366	PHY 102 PHY 102 Lab
1994	MAT 162 MAT 419/519 MAT 564[103] PHY 102	MAT 152 MAT 162 MAT 531	Summer Ventures
1993	MAT 112 (2 Sections) MAT 162 PHY 311[104]	MAT 111 MAT 162 MAT 418/518	PHY 102 PHY 102 Labs
1992	MAT 112 MAT 162[105] MAT 419/519	MAT 162 MAT 425/525 MAT 491[106]	PHY 102 PHY 102 Labs
1991	MAT 112 MAT 361	MAT 111 MAT 162 MAT 418/518	MAT 111 PHY 102 PHY 102 Labs
1990		MAT 111 (2 Sections) MAT 162	

[101] In 1994 I introduced a book called *Earth Algebra* for teaching some sections of College Algebra. We discussed the greenhouse effect and the buildup of carbon dioxide in the atmosphere. By studying a variety of sources of carbon dioxide emissions, the text introduced the functions that we typically cover in this course and use graphing calculators to model data. The text was used for several semesters, but not adopted by the department.

[102] Second half course in complex variables. It was the only time this class was taught while I was at UNCW.

[103] Special course on Linear and Nonlinear Waves was given for one student in which two lectures were delivered per week.

[104] Course offered to one student due to a course time conflict. It consisted of weekly meetings, homework and tests.

[105] First implementation of the MCP Project, an NSF supported project using computers in teaching math, physics and chemistry. It was continued for 5 years in MAT 161-162 by G. Lugo and me.

[106] DIS offered to one student on perturbation theory for differential equations as part of undergraduate research support. It consisted of weekly lectures and assignments.

List of Different Courses Taught at UNCW

Course	Title	Comments
MAT 111	College Algebra	
MAT 112	Trigonometry	
MAT 152	Basic Calculus with Applications	
MAT 162	Calculus with Analytic Geometry	5 hrs per week
MAT 261	Multivariate Calculus	5 hrs per week
MAT 325	Computational Mathematics	
MAT 335	Linear Algebra (DIS)	
MAT 346	Historical Development of Mathematics	
MAT 361	Differential Equations	
MAT 365	Advanced Calculus I /Later renamed Vector Calculus	
MAT 366	Advanced Calculus II/Later renamed and renumbered as MAT 367	
MAT 367	Principles in Applied Math	
MAT 475	Nonlinear Dynamical systems and Chaos	
MAT 491	Perturbation Methods (DIS)	
MAT 495	Senior Seminar –Individual and group projects and also taught as a course	
MAT 499	Honors Work in Mathematics	
MAT 515/415	Introduction to Complex Variables	
MAT 516	Complex Analysis II	
MAT 518/418	Applied Analytical Methods I (Later PDE I)	
MAT 519/419	Applied Analytical Methods II (Later PDE II)	
MAT 525/425	Numerical Analysis I	
MAT 526	Numerical Analysis II (DIS)	
MAT 531	Linear Algebra	
MAT 551/451	Topology	
MAT 563/463	Ordinary Differential Equations	
MAT 564	Nonlinear Dynamical Systems and Chaos	
MAT 591	Mathematical Theory of Stellar Evolution	
MAT 599	Thesis Work in Mathematics	
MSC 591	Underwater Acoustics and Signal Processing I (DIS)	
MSC 591	Fourier Analysis of Times Series in Physical Oceanography (DIS)	Several Offerings
PHY 101	Elementary College Physics I	3hrs + 2 hr Labs
PHY 102	Elementary College Physics I	3hrs + 2 hr Labs
PHY 201	General Physics I	4 hrs plus labs
PHY 202	General Physics II	4 hrs plus labs
PHY 311	Mathematical Physics (Several times as DIS as well)	4 hrs per week
PHY 335	Modern Physics (Couple of times as DIS as well)	4 hrs per week
PHY 411	Electricity and Magnetism I	
PHY 412	Electricity and Magnetism II	
PHY 444	Quantum Mechanics	4 hrs per week
PHY 445	Optics	
PHY 455	Thermal Physics	
PHY 490	Introduction to General Relativity	
PHY 490	Introduction to Cosmology	
PHY 490	Introduction to General Relativity and Cosmology	
PHY 490	The Physics of Black holes	
PHY 490	Astrophysics and Cosmology	
PHY 491	DIS – Several: Black holes/Nonlinear Waves/General Relativity	
PHY 491	DIS - Nonlinear Physics	
PHY 495	Senior Seminar – Both individual projects and taught as a Course	
PHY 499	Honors Work in Physics	
PHY 591	Underwater Acoustics and Signal Processing II (DIS)	
HON 110	Honors Course in Chaos – Team Taught	
HON 120	Honors Seminar – The First Three Minutes of the Universe	
HON 210	Honors Seminar – The Legacy of Albert Einstein	
HON 210	The Physics of Interstellar	
HON 210	Joy of Mathematical Puzzles and Games	
HON 210	Cosmic Origins	
CSC 105	Introduction to Computing and Computer Applications	
SCI 501	Introduction to Natural Sciences I – Team Taught	5 hrs per week
SCI 502	Introduction to Natural Sciences II – Team Taught	5 hrs per week