

Jue Wang

*"Teaching is more than imparting knowledge, it is inspiring change.
Learning is more than absorbing facts, it is acquiring understanding."
– William Arthur Ward*

Research Interests

- * Image analysis and processing * Mathematical modeling * Inverse problems
- * Medical imaging * Cancer/disease detection and classification * Medical data analysis
- * Artificial intelligence * Machine learning * Deep learning
- * Fluid dynamics and turbulence

Employment

- 2023–present **Professor**, UNION COLLEGE.
- 2017–2023 **Associate Professor**, UNION COLLEGE.
- 2011–2017 **Assistant Professor**, UNION COLLEGE.
- 2007–2011 **Visiting Assistant Professor**, UNION COLLEGE.

Education

- 2007 **Ph.D. in Mathematics**, UNIVERSITY OF WISCONSIN – MADISON.
Dissertation: On Lower Branch Exact Coherent Structures in Turbulent Shear Flows
- 2001 **B.S. in Mathematics**, PEKING UNIVERSITY, BEIJING, CHINA.

Grants

- 2020–2022 **New York Six Academic Collaboration Grant, PI.**
Collaborative Partnership to Foster Liberal Arts Education and Research in Applied Mathematics
- 2020–2021 **Union College IEF Teaching with Technology Grant.**
Designing Effective, Engaging, Enjoyable E-learning
- 2019–2022 **NSF – MRI (NSF 1919570) \$384,725, Co-PI.**
Acquisition of a High-speed Volumetric Particle Image Velocimetry System for Fluid Mechanics Research and Research Training in Science, Mathematics, and Engineering
- 2018–2019 **Union College Faculty Research Grant.**
Enabling Real-Time Volumetric 3D Ultrasound Imaging at Low Cost
- 2018–2019 **Union College MOSH Maker Co-Curricular Activity Grant.**
Bringing Mathematics to Life with 3D Making
- 2018–2019 **Albany Medical Center (in-kind), Co-Investigator.**
Application of Enclosure Transform Interest Point Detectors and Deep Convolutional Neural Networks in Determining Malignant vs Benign Masses on Breast Imaging
- 2017–2018 **Union College Faculty Research Grant.**
Cancer Classification via Convolutional Neural Networks
- 2015–2016 **Union College Internal Education Foundation Grant \$10,095, Co-Investigator.**
Acquisition of a Laser Cutter to Enhance MakerWeb Curricular Activities

2011–2016 **NIH – NIBIB (NIH 1R15EB012299–01A1) \$250,000, PI.**

Artifact-Free Reconstruction of Medical Imaging Information

2010–2011 **Union College Faculty Research Grant.**

Attenuation Compensation in Ultrasound Imaging

Honors and Awards

- 2024 **SUITED 2024: Moving research from lab to marketplace**, *Supporting Undergraduate Institutions in Technology and Entrepreneurship Development.*
- 2024 **Invited Speaker**, *Eight Branches of Growth*, Union College.
- 2023–2026 **NSF Framing Mathematics as a Foundation for Ethical STEM.**
- 2023–2024 **Faculty Interest Groups for Student Success (FIGs²)**, Union College, Howard Hughes Medical Institute (HHMI) Grant Inclusive Excellence Initiative.
- 2021 **Invited Speaker**, *Data Science for Social and Environmental Justice Writing and Research Development Group*, Jackson State University.
Expanding the Network of STEM Scholars through the Advance Women of Color Summer Writing Retreat
- 2020 **Faculty Development Institute Incubator**, *Make Next Year Special*, Union College.
- 2019 **Invited Speaker**, *Leaps of Faith: 8 Stories about Cultivating Complex Thinkers*, Union College.
- 2018 **Invited Leader**, *Women in Engineering (WIE) Networking*, IEEE LSC.
- 2018 **NSF SIMIODE Curriculum Development in STEM Effort.**
- 2016 **Presidential Project for Global Learning**, *Andrew W. Mellon Foundation Presidential Leadership Grant.*
Faculty Study Tour in China: to see first-hand the effects of rapid industrialization and economic growth, and to develop new interdisciplinary courses
- 2015 **Faculty Development Institute for Teaching with Technology**, Union College.
- 2011 **NSF Travel Award**, *Casablanca International Workshop on Mathematical Biology.*
- 2010 **NSF Travel Award**, *The Workshops on Inverse Problems and Applications*, MSRI.
- 2009 **NSF Travel Award**, *The Workshop on Mathematical Problems in Industry.*
- 2007 **First Place Poster Prize**, *SIAM Conference on Applications of Dynamical Systems.*
- 2007 **AWM Travel Award**, *SIAM Conference on Applications of Dynamical Systems.*
- 2006 **Excellence in Teaching Award**, *University of Wisconsin-Madison.*
- 2004 **Letters and Sciences Teaching Fellow**, *University of Wisconsin-Madison.*
- 2003 **Elizabeth Hirschfelder Fund Scholarship**, *University of Wisconsin-Madison.*
- 2001–2005 **Superior Teaching Assistant**, *University of Wisconsin-Madison.*
- 1999 **2nd Place Award**, *The Mathematical Contest in Modeling (MCM)*, China.
- 1998 **Jiuzhang Mathematical Scholarship Award**, *Peking University, China.*

Peer-Reviewed Publications

31. **Topological data analysis for robust classification of circulating cancer cells**, with Y. Yu, Proc. Asilomar Conference on Signals, Systems, and Computers, 544–548, 2024.
30. **Subtype classification of circulating rare cells for cancer prognosis using fluorescence-topology integrated analysis**, with Y. Yu, Proc. ICCM, 107–117, 2024.
29. **Fluorescence image visualization using multi-channel minimax optimization (MCMO)**, with Y. Yu, Proc. IEEE CBMS (Computer-Based Medical Systems), 137–142, 2023.
28. **Convexified coupled active contour segmentation of clues cells for assessing bacterial vaginosis with immunofluorescence microscopy**, with Y. Yu, Proc. Asilomar Conference on Signals, Systems, and Computers, 307–311, 2023.

27. **Dual resolution detection and identification of circulating cancer cells from immunofluorescence microscopy**, *with Y. Yu*, Proc. Asilomar Conference on Signals, Systems, and Computers, 312–316, 2023.
26. **Mathematics for Sustainable Humanity – Population, Climate, Energy, Economy, Policy, and Social Justice**, book chapter in the Foundations for Undergraduate Research in Mathematics (FURM), Mathematics Research for the Beginning Student, Volume 1, Springer, 2022.
25. **Automatic detection and identification of trichomonas vaginalis from fluorescence microscopy images**, *with Y. Yu*, Proc. BIOSTEC Volume 2: Bioimaging, 190–197, 2022.
24. **Categorization of circulating tumor cells from lung cancer with compact deep learning**, *with Y. Yu*, Proc. SPIE Medical Imaging: Computer-Aided Diagnosis, 1203310, 2022.
23. **A novel grid regression demodulation method for radiographic grid artifact correction**, *with Y. Yu*, Medical Physics, vol. 48, no. 7, 3790–3803, 2021.
22. **Coupled active contours for clue cell segmentation from fluorescence microscopy images**, *with Y. Yu*, Proc. BIOSTEC Volume 2: Bioimaging, 144–151, 2021.
21. **Detection of filamentous microorganisms in fluorescence microscopy images**, *with Y. Yu*, Proc. IEEE Eng. Med. Biol. Soc., 1895–1898, 2020.
20. **Pandemic modeling – Ebola, COVID-19, and many more**, SIMIODE, 7518, 2020.
19. **Morphological rank-space segmentation of clumped filaments in fluorescence microscopy images**, *with Y. Yu*, Proc. ICCM (International Conference on Computational Methods), 777–786, 2019.
18. **Automated enumeration and classification of bacteria in fluorescent microscopy imagery**, *with Y. Yu*, Proc. IEEE LSC (Life Sciences Conference), 57–60, 2018.
17. **The next time you play HvZ, think about differential equations**, SIMIODE, 5214, 2018.
16. **Inner ear drug delivery for treating hearing loss**, SIMIODE, 5069, 2018.
15. **Differential equations and resonance – can a human singing voice shatter a wine glass?**, SIMIODE, 5051, 2018.
14. **Modeling cancer growth with differential equations**, SIMIODE: Systemic Initiative for Modeling Investigations and Opportunities with Differential Equations, 4845, 2018.
13. **Variational principle for ultrasonic artifact correction and signal segmentation**, *with Y. Yu*, Proc. Asilomar Conference on Signals, Systems, and Computers, 1486–1490, 2017.
12. **Enclosure transform for interest point detection from speckle imagery**, *with Y. Yu*, IEEE Transactions on Medical Imaging, vol. 36, no. 3, 769–780, 2017.
11. **Automatic detection of direct radiation for digital fluoroscopy optimization**, *with Y. Yu and S.T. Acton*, Proc. IEEE ICIP, 3379–3383, 2016.
10. **X-ray collimator shutter detection by active-rods**, *with Y. Yu and S.T. Acton*, Proc. IEEE ICIP, 2350–2354, 2016.
9. **Automatic contrast enhancement by variational minimax optimization**, *with Y. Yu*, Proc. IEEE ICIP, 173–177, 2015.
8. **The asymptotic eigenvalues of first-order spectral differentiation matrices**, *with F. Waleffe*, Journal of Applied Mathematics and Physics, vol. 2, no. 5, 176–188, 2014.
7. **Heel effect adaptive flat field correction of digital x-ray detectors**, *with Y. Yu*, Medical Physics, vol. 40, no. 8, 081913, 2013.
6. **Beam hardening-respecting flat field correction of digital x-ray detectors**, *with Y. Yu*, Proc. IEEE ICIP (International Conference on Image Processing), 2085–2088, 2012.
5. **Despeckling trilateral filter**, *with Y. Yu and G. Dong*, Proc. IEEE IVMS (Image, Video, and Multidimensional Signal Processing), 42–47, 2011.

4. **Backscatter-contour-attenuation joint estimation model for attenuation compensation in ultrasound imagery**, with *Y. Yu*, IEEE Transactions on Image Processing, vol. 19, no. 10, 2725–2736, 2010.
3. **Homogenization of the equations governing the flow between a slider and a rough spinning disk**, with *D. Cargill et al.*, MPI Workshop Report, MIIIS Eprints Archive, 2009.
2. **Lower branch coherent states in shear flows: transition and control**, with *J. Gibson and F. Waleffe*, Physical Review Letters, 98:204501, 2007.
1. **Transition threshold and the self-sustaining process**, with *F. Waleffe*, IUTAM Symposium on Laminar-Turbulent Transition and Finite Amplitude Solutions, Springer, 85–106, 2005.

Professional Service

- ◇ **Reviewer.**
 - IEEE Transactions on Medical Imaging (impact factor: 11.037)
 - IEEE Access (impact factor: 3.9)
 - IEEE ICIP (acceptance rate: 40-45%)
 - MICCAI: Medical Image Computing and Computer Assisted Intervention (acceptance rate: 30%)
 - BMC Medical Research Methodology (impact factor: 4.614)
 - Cluster Computing, Springer Nature (impact factor: 4.4)
 - Journal of Medical and Biological Engineering (impact factor: 2.0)
 - Asian Journal of Mathematics and Computer Research
- ◇ **Conference Session Chair.**
 - 10th International Congress on Industrial and Applied Mathematics (ICIAM), 2023
 - SIAM Annual Meeting, 2017
 - SIAM Conference on Imaging Science, 2012 & 2016
 - Upstate New York Undergraduate Research Conference, 2012
- ◇ **Program Committee / Reviewer / Session Chair.**
 - National Conference on Undergraduate Research (NCUR), 2024
 - The 16th Australasian Data Mining Conference, 2018
 - Hudson River Undergraduate Mathematics Conference XVI 2009 & XXII 2015
 - Union College Mathematics Conference, 2011
- ◇ **Biography Writer and Data Collector**, The Association for Women in Mathematics (AWM) “EvenQuads”: Notable Women in Mathematics Playing Cards Project, 2022.
- ◇ **Contest Judge**, SIMIODE Challenge Using Differential Equations Modeling (SCUDEM), 2020.
- ◇ **Co-Organizer**, The Skidmore-Union Network (SUN) Lecture, 2012.

College Service

- ◇ **College Committee.**
 - Committee on Teaching and Advising (COTA), 2021–present
 - Writing Board, 2021–2024
 - Faculty Appeals Committee (FAC), 2022 SP–present
 - Search Committee for the Director of Templeton Institute and Associate Dean for Engineering and Computer Science, 2022 FA–2023 WI
 - Committee for Idol Relocation and Communications, 2022 SU–present
 - New Gen Ed “Complex Questions: Global Challenges & Social Justice” Implementation Committee, 2021–2022
 - Interview Committee for Class Dean Search, 2022 FA
 - Ad Hoc Tenure Committee, 2018–2019, 2023–2024
 - Co-Chair, The President’s Commission on the Status of Women, 2013–2015
- ◇ **Pedagogical Partner**, Mentorship Program for New Faculty, 2018–19, 2019–20, 2022–23.
- ◇ **Event Planner**, Minerva Central’s “All Around U” Event, a celebration of cultural diversity, differences, and inclusion, 2021.
- ◇ **Faculty Marshal**, Commencement, June 2022.

- ◇ **Union Coalition for Inclusiveness and Diversity (UCID).**
- ◇ **Faculty Representative**, Admissions Open House.

Departmental Service

- ◇ **Department Chair**, July 2024–present.
- ◇ **Mentor / Advisor.**
 - Mathematical/Interdisciplinary Contest in Modeling (MCM/ICM) Advisor, 2008–present
 - Actuarial Advisor, 2011–2013
 - Graduate School Advisor, 2007–2009
- ◇ **Organizer / Coordinator.**
 - Transfer Coordinator, 2021–present
 - Research Seminar Organizer/co-organizer, 2009–10, 2014–15, 2023–24
 - Student Seminar Organizer/co-organizer, 2008–09, 2019–20
- ◇ **Departmental Committee.**
 - Global Challenge for Calculus Task Force, 2022–2023
 - Committee for Establishing Financial and Actuarial Mathematics Minor, 2021–2022
 - Departmental Mentor Group, 2018–2022
 - Math Curriculum Steering Committee, 2020–2021
 - MTH 130 Curriculum Redesign Task Force, 2019–2021
- ◇ **Departmental Representative.**
 - Mathematical Association of America (MAA) Seaway Representative, 2015–present
 - Career Center Representative, 2017–2024
 - Admissions Liaison, 2017–2020

Service to the Broader Community

- ◇ The Town's Comprehensive Plan Committee, 2024–present
- ◇ The Town's Conservation Advisory Council, 2024–present
- ◇ The Town's Natural Resources Inventory (NRI) Working Group, 2024
- ◇ Resident Care Volunteer at the Joan Nicole Prince Home providing bedside care and support to the terminally ill at the end of life, since June 2022
- ◇ Presenting exhibitions at the Electric City Mini Maker Faire, showcasing 3D printing and visualization in mathematics, 2019 & 2022
- ◇ Volunteering in the Octopus's Garden, a student-run garden for local sustainable initiatives

Student Mentorship

- ◇ **Mentoring undergraduate summer research.**
 - 22 students (166 student weeks), Summers 2011, 12, 13, 17, 18, 20, 21, 22
 - Funding sources:**
 - * Union College Summer Research Fellowship
 - * National Institutes of Health (NIH)
 - * Kelsey Hastings Golitz Memorial Fund for Cancer Research
 - * Sciortino Cancer Research Fund
 - * Davenport Research Fellowship
 - * NASA New York Space Grants
- ◇ **Mentoring senior theses, scholars projects, independent studies, and other research projects.**
 - 64 students (76 academic terms)
- ◇ **Mentoring students presenting at national conferences.**
 - 3 at the National Conference on Undergraduate Research (NCUR), 2012, 2021, 2025
 - 4 at the IEEE MIT Undergraduate Research Technology Conference, 2017, 2020, 2022

- ◇ **Mentoring students presenting at regional conferences.**
 - NY6 Upstate Undergraduate Research Conference
 - Hudson River Undergraduate Mathematics Conference
 - Northeast Society for Developmental Biology Meeting
- ◇ **Mentoring students presenting at local meetings.**
 - Annual Steinmetz Symposium
 - Summer Research Poster Sessions
 - Homecoming Poster Sessions
 - Math Department Student Seminars
- ◇ **Co-mentoring 1 undergraduate peer-reviewed journal publication, 2019.**
- ◇ **Mentoring student teams participating in the MCM/ICM.**
MCM: Mathematical Contest in Modeling. ICM: Interdisciplinary Contest in Modeling
 - Meritorious Winner (top 10%): 2008, 2009, 2010, 2014, 2015
 - Honorable Mention (top 40%): 2011, 2013
 - Successful Participant: 2012, 2016–18, 2020
- ◇ **Mentoring students participating in the 7th Annual WiDS Datathon Challenges: Equity in Healthcare, 2023–24.**
WiDS: Women in Data Science Worldwide. This challenge involves a machine learning task to predict time to cancer treatment based on patients' characteristics through analyzing a rich, real-world oncology dataset.

Research Conference Presentations

- 2024 **Asilomar Conference on Signals, Systems, and Computers**, *Pacific Grove, CA*, Topological Data Analysis for Robust Classification of Circulating Cancer Cells.
- 2024 **The 15th International Conference on Computational Methods (ICCM)**, Topological Classification of Circulating Stromal Cells for Cancer Detection.
- 2023 **The 10th International Congress on Industrial and Applied Mathematics (ICIAM)**, *Tokyo, Japan*, Coupled Active Contour Segmentation of Clue Cells from Immunofluorescence Microscopy.
- 2023 **IEEE 36th International Symposium on Computer-Based Medical Systems**, *L'Aquila, Italy*, Fluorescence Image Visualization using Multi-Channel Minimax Optimization (MCMO).
- 2022 **Asilomar Conference on Signals, Systems, and Computers**, *Pacific Grove, CA*, Convexified Coupled Active Contour Segmentation of Clues Cells for Assessing Vacterial Vaginosis with Immunofluorescence Microscopy.
- 2022 **MAA Seaway Meeting**, *Loudonville, NY*, Quaternions – Navigating in Space and inside the Human Body.
- 2022 **International Conference on Bioimaging**, Automatic Detection and Identification of *Trichomonas Vaginalis* from Fluorescence Microscopy Images.
- 2021 **International Conference on Bioimaging**, Coupled Active Contours for Clue Cell Segmentation from Fluorescence Microscopy Images.
- 2020 **International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)**, Detection of Filamentous Microorganisms in Fluorescence Microscopy Images.
- 2019 **Northeast Society for Developmental Biology Meeting**, *Woods Hole, MA*, Computational Analysis of the Spiral Intestine in *Leucoraja Erinacea*, poster.
- 2019 **AMS Special Session on Statistical, Variational, and Learning Techniques in Image Analysis and their Applications to Biomedical, Hyperspectral and Other Imaging, AMS-MAA Joint Mathematics Meetings**, *Baltimore, MD*, Automatic Detection of Breast Masses and Location of the Prostate.
- 2018 **IEEE Life Sciences Conference**, *Montréal, Canada*, Automatic Detection of Direct Radiation for Digital Fluoroscopy Optimization, poster.
- 2017 **Asilomar Conference on Signals, Systems, and Computers**, *Pacific Grove, CA*, Variational Principle for Ultrasonic Artifact Correction and Signal Segmentation.

- 2017 **SIAM Annual Meeting**, *Pittsburgh, PA*, Detecting Breast Masses and the Location of the Prostate.
- 2016 **IEEE International Conference on Image Processing (ICIP)**, *Phoenix, AZ*, Automatic Detection of Direct Radiation for Digital Fluoroscopy Optimization, poster.
- 2016 **IEEE International Conference on Image Processing (ICIP)**, *Phoenix, AZ*, X-ray Collimator Shutter Detection by Active-Rods, poster.
- 2016 **SIAM Conference on Imaging Science**, *Albuquerque, NM*, A Weak Form Attenuation Compensation Model for Ultrasonic Imagery.
- 2015 **GE Global Research Center**, *Niskayuna, NY*, Artifact Correction in Ultrasound Images with Application in Prostate Cancer Treatment.
- 2015 **IEEE International Conference on Image Processing (ICIP)**, *Québec City, Canada*, Automatic Contrast Enhancement by Variational Minimax Optimization, poster.
- 2014 **International Conference on Applied and Engineering Mathematics**, *Shanghai, China*, The Asymptotic Eigenvalues of First-Order Spectral Differentiation Matrices.
- 2013 **SIAM Conference on Computational Science & Engineering**, *Boston, MA*, Heel Effect Adaptive Flat Field Correction of Digital X-ray Detectors.
- 2012 **IEEE International Conference on Image Processing (ICIP)**, *Orlando, FL*, Beam Hardening-respecting Flat Field Correction of Digital X-ray Detectors, poster.
- 2012 **SIAM Conference on Imaging Science**, *Philadelphia, PA*, Attenuation Compensation in Ultrasound Imaging.
- 2011 **Casablanca International Workshop on Mathematical Biology**, *Casablanca, Morocco*, 3D Vascular Segmentation Using A Sequential Monte Carlo Approach.
- 2011 **IEEE Image, Video, and Multidimensional Signal Processing Workshop (IVMSP)**, *Ithaca, NY*, Despeckling Trilateral Filter.
- 2011 **Joint Mathematics Meetings**, *New Orleans, LA*, Blood Vessel Segmentation in Volumetric Ultrasound.
- 2010 **SIAM Annual Meeting**, *Pittsburgh, PA*, Ultrasound Image Segmentation and Attenuation Estimation.
- 2009 **SIAM Conference on Mathematics for Industry: Challenges and Frontiers**, *San Francisco, CA*, BCA Joint Estimation Method for Attenuation Compensation in Ultrasound Images.
- 2009 **Project NExT Young Mathematicians' Network Poster Session at the Joint Mathematics Meetings**, *Washington D.C.*, Lower Branch Exact Coherent Structures in Turbulent Shear Flows.
- 2008 **Union College**, The Minimization Problem in Image Restoration.
- 2007 **AWM Workshop in conjunction with the SIAM Conference on Applications of Dynamical Systems**, *Snowbird, Utah*, Lower Branch Exact Coherent Structures – Backbone of The Separatrix, poster.
- 2007 **SIAM Conference on Applications of Dynamical Systems**, *Snowbird, Utah*, R^{-1} Scaling of Lower Branch Coherent States in Plane Couette Flow.
- 2004 **APS Division of Fluid Dynamics 57th Annual Meeting**, *Seattle, WA*, R^{-1} Scaling of The Lower Branch Exact Coherent Structures.

Teaching Presentations

- 2025 **Faculty Panel: The Science of Teaching & Learning – Highlighting Faculty Research.**
- 2022 **Panel Discussion for New Faculty: Teaching and Pedagogy.**
- 2021 **President's Council Meeting**, Minervas Large-Scale Societal and Environmental Challenges Course Presentation.
- 2020 **Silver Linings: Stories of Innovation at Union College.**
- 2019 **8x8 Leaps of Faith: 8 Stories about Cultivating Complex Thinkers for a Messy World**, Engaging Students to Connect Mathematical Concepts: See-Touch-Do-Connect-Apply Math.

- 2019 **Panel Discussion for New Faculty: Teaching and Pedagogy.**
- 2018 **Panel Discussion for New Faculty: Teaching and Pedagogy.**
- 2016 **Faculty Development and Learning Presentation**, Big Ideas, Experiences and Takeaways.
- 2016 **Faculty Development and Learning Presentation**, Read it, Calculate it, Build it: Student Learning in the 3rd Dimension.
- 2012 **Committee on Teaching Panel: Adjusting to Union.**
- 2008 **Thurston House Seminar Talk and Discussion**, Abacus: History and Use.

Teaching Experience (Union College)

- IMP 111: Integrated Mathematics and Physics (team-taught)
 - IMP 121: Integrated Mathematics and Physics 2 (team-taught)
 - MIN 203: Climate Change: Knowledge Empowers Action (team-taught)*
 - MTH 063: Mathematics of Sustainability*
 - MTH 110: Differential Calculus
 - MTH 113: AP Calculus
 - MTH 115: Differential Vector Calculus and Matrix Theory
 - MTH 115H: Enriched Differential Vector Calculus and Matrix Theory
 - MTH 117: Integral Vector Calculus
 - MTH 130: Ordinary Differential Equations
 - MTH 138: Methods of Applied Mathematics 1
 - MTH 197: Discrete Mathematics
 - MTH 234: Differential Equations
 - MTH 238: Methods of Applied Mathematics
 - MTH 295H/296H: Mathematics Honors Independent Project
 - MTH 334: Partial Differential Equations*
 - MTH 340: Linear Algebra
 - MTH 490: Independent Study
 - MTH 497/498/499: Mathematics Senior Thesis
 - IDM 487/488/489: Interdepartmental Senior Thesis (team-taught)
- * new courses I developed/co-developed