



EE398 – Introduction to Professional Issues

Prof. Karl F. Böhringer
University of Washington
Winter 2025

Introduction to Professional Issues

- What is the goal?
- How does this course function?
- What is expected from you?
 - How will your grade be computed?
- Who am I?

What is the goal of this course?

- Stimulate your thinking and growth on professional issues:
 - Career / salary / employer relationships
 - Professional communication skills
 - Working as an engineer within society's expectations
 - Ethical issues in designing autonomous technology
 - Intellectual property
- Not:
 - Teaching you right and wrong

What is the goal of this course?

Explore three main themes:

- Your career future
- “It’s a big world out there”
- Engineering ethics

What is the goal of this course?

Discuss a number of possible topics:

- After you graduate
 - Starting a job
 - Salary negotiation and realistic earning expectations
 - Should I go directly to grad school?
 - Ethical practice of engineering
 - Design of ethical autonomous agents
 - Patents and IP
 - Diversity and inclusion in the engineering profession
 - Starting a company
 - Social media and your professional identity
- Hear from guest lecturers

How does this course function?

- Instructor: Prof. Karl F. Böhringer (karlb@uw)
 - Office hours: after class or by appointment, ECE 253-I
- Teaching Assistant: Kate Tseng (lingant@uw)
 - Office hours: after class or by appointment
- Canvas: canvas.uw.edu/courses/1788261
 - All class materials will be posted on Canvas
 - Check announcements and discussion board on Canvas regularly

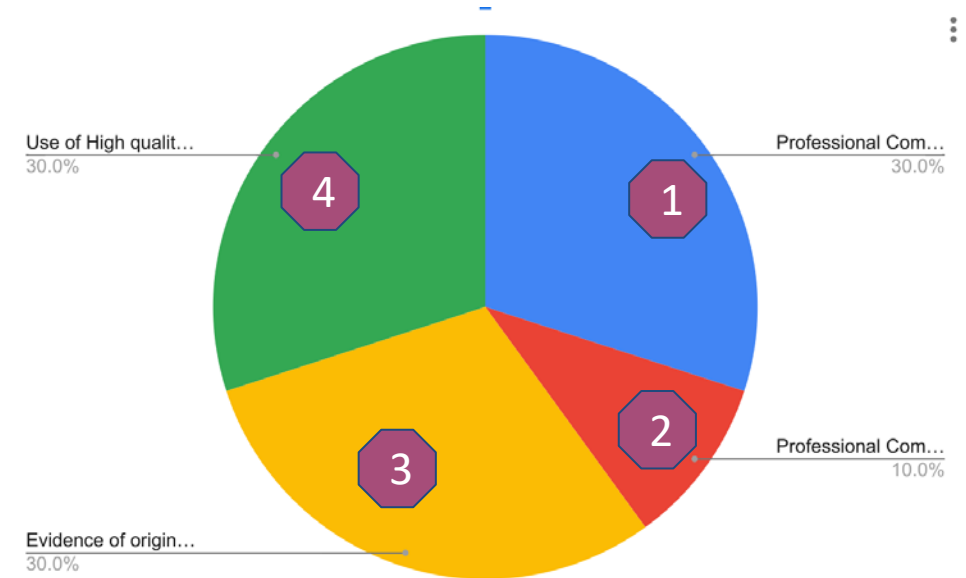
What is expected from you?

- Assignments:
 - 10 in-class “reflections” (10 x 2.5 points)
 - Essay (25 points)
 - Career launch plan (25 points)
 - Final project (25 points)
- 100 points total:
 - 79 points for a 4.0
 - For every 2 points, grade decreases by 0.1
 - 13 points to pass with 0.7
- Submit all assignments via Canvas

Grading Rubrics

- No unique right answers
- Quality of your answers matters

Weights of rubric categories will depend on specific assignments



30%	10%	30%	30%
1	2	3	4
Professional Communication 1: Logical Organization	Professional Communication 2: Conventions, Spelling, punctuation, grammar.	Evidence of original thinking	Use of high quality sources and LLM quality control

Who am I?

- Professor, Electrical & Computer Engineering and Bioengineering
- Director, Institute for Nano-engineered Systems (NanoES)
- Site Director, NSF National Nanotechnology Coordinated Infrastructure
- Postdoctoral Researcher, UC Berkeley
- M.S. / Ph.D., Cornell University
- Diplom-Inform., Technical University of Karlsruhe (now KIT), Germany
- High School Diploma, Freudenstadt, Germany



INSTITUTE FOR NANO-ENGINEERED SYSTEMS



NanoES building, \$87.8M, opened 2017

- Catalyzing innovative, interdisciplinary, and industry-relevant research in the design, fabrication, and integration of scalable nano-engineered devices and systems
- Focus areas: photonic & quantum devices, augmented humanity, scalable nanomanufacturing
- Technical and social events, grant support, student awards
- Floors G, 2, 3 in the NanoES building with high-quality labs, desk space and offices
- nano.uw.edu



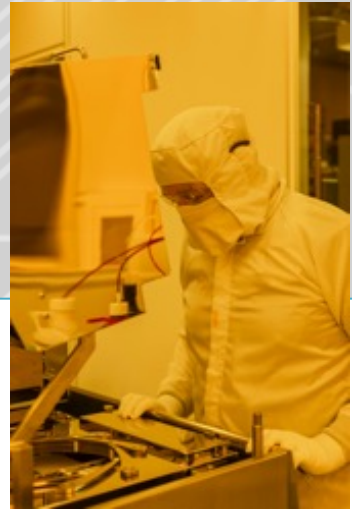
NCCI NORTHWEST NANOTECHNOLOGY INFRASTRUCTURE



- The UW is one of 16 sites in the National Nanotechnology Coordinated Infrastructure (NCCI), a network of research facilities supported by the National Science Foundation
- Our site includes the Molecular Analysis Facility (MAF) and the Washington Nanofabrication Facility (WNF), plus several facilities at Oregon State University
- We provide researchers from academia, small and large companies, and government with access to university user facilities with leading-edge fabrication and characterization tools, instrumentation, and expertise within all disciplines of nanoscale science, engineering and technology.
- Education & outreach, REUs, staff exchanges, awards, Northwest Nanolab Alliance
- nnci.net



Washington Nanofabrication Facility (WNF)



Open-access nanofabrication facility offering instrumentation and expertise to develop prototypes of nanostructures, materials, devices and systems covering conventional and advanced semiconductor and MEMS processing, as well as microfluidics and photonics

Academic, government, and industrial users; on-site and remote (contract) work

14 staff, + ~10 part-time undergraduate lab assistants

Recent Investments

- SAMCO RIE-10NR etcher – to be available to users by June
- Disco wafer grinder – in operation
- Oxford PlasmaPro 100 Cobra 300 ICP-RIE plasma etcher (CI / ALE)
- Goniometer (Intel donation)
- Oxford ICP 380 fluorine etcher upgrade: CH_4 , H_2

wnf.uw.edu

Coming Soon

- Angstrom Engineering e-beam evaporator
- IntelVac ion beam etcher (donation)
- SPTS FI etcher (donation)
- Raith Voyager e-beam lithography (donation)

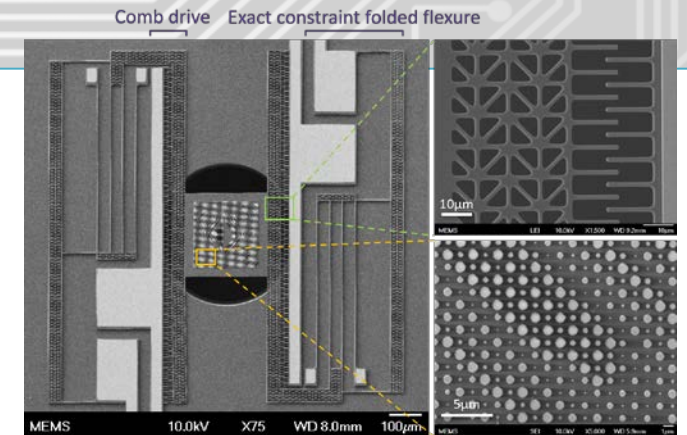
Future Plans

- Heidelberg MLA 150 direct write laser litho
- Bruker FastScan AFM (Murdock trust)
- SEM, PECVD, litho tools: bonder, aligner, track (federal earmark)

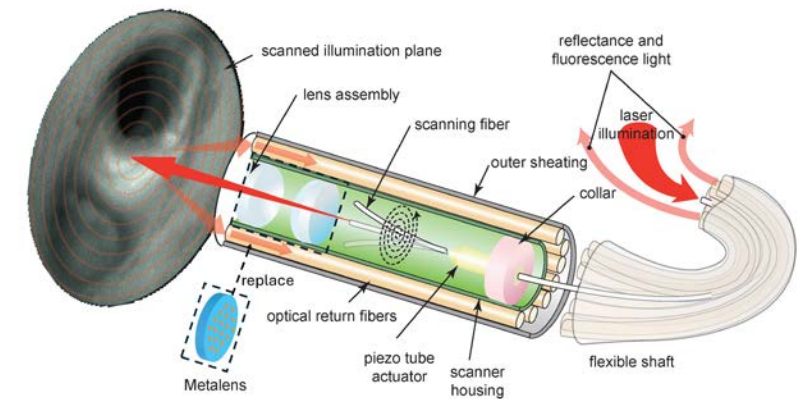
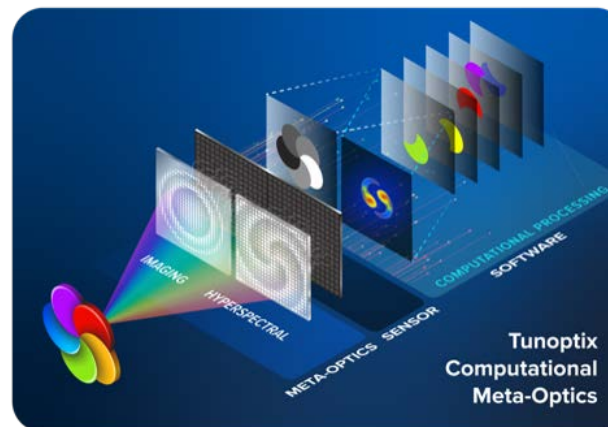
**Visit the WNF
during the
COE Discovery Days**

Research Interests

- Microsystems and nanotechnology
 - Micro-robotics and self-assembly
 - Microfluidics and diagnostics
 - Metasurfaces and integrated micro-optics
- Co-founder, Tunoptix Inc.
 - With Prof. Arka Majumdar



MEMS integrated Alvarez tunable optics



Metalens Integrated Scanning Fiber Endoscope