MATLENG 150 It’s a Material World: The Role of Materials in Society
3 cr. Undergraduate.
Introductory course on the nature of materials and their role in the development of society. Historical perspectives, current societal issues, and future trends are discussed.
Prerequisites: none.
General Education Requirements: NS+
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 201 Engineering Materials
3 cr. Undergraduate.
Basic behavior and processing of engineering materials emphasizing metals and alloys and including ceramics and plastics. Laboratory work is included.
Prerequisites: Math 231(C), score of 1 on chem placement test or min grade C in Chem 100(P)
Last Taught: Spring 2021, Fall 2020, Spring 2020, Fall 2019.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 299 Topics in Materials:
1-3 cr. Undergraduate.
Work on new material in materials. Section title and credits announced whenever course is offered.
Prerequisites: specific courses dependent on topic.
Course Rules: May be retaken w/chg in topic to 6 cr max.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 316 Thermodynamics of Materials
3 cr. Undergraduate.
Chemical thermodynamics and application of thermodynamics to single and multi-component materials systems. Topics include heat and mass balance, enthalpy, entropy, free energy, reaction equilibria, behavior of solutions; phase diagrams.
Prerequisites: MATH 233(P), PHYSICS 209(P) or PHYSICS 219(P), MATLENG 201(P) and CHEM 104(P) OR CHEM 105(P).
Last Taught: Fall 2020, Fall 2019.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 316G Thermodynamics of Materials
3 cr. Undergraduate.
Chemical thermodynamics and application of thermodynamics to single and multi-component materials systems. Topics include heat and mass balance, enthalpy, entropy, free energy, reaction equilibria, behavior of solutions; phase diagrams.
Prerequisites: MATH 233(P), PHYSICS 209(P) or PHYSICS 219(P), MATLENG 201(P) and CHEM 104(P) OR CHEM 105(P).
Last Taught: Fall 2020, Fall 2019.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 330 Materials and Processes in Manufacturing
3 cr. Undergraduate.
Principles and practice of manufacturing processes for engineering materials. Processes include casting, forging, rolling, extrusion, sintering and machining. Laboratory work is included.
Prerequisites: MatlEng 201(P).
Last Taught: Summer 2021, Spring 2021, Fall 2020, Summer 2020.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 380 Engineering Basis for Materials Selection
3 cr. Undergraduate.
The study of the basis for materials selection in the design of engineering systems. Materials design parameters, classes of materials case studies in material's selections.
Prerequisites: MatlEng 201(P).
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 385 Introduction to Biomaterials
3 cr. Undergraduate.
Introduction to the fundamentals of biomaterials including ceramics, metals, and polymers. Important issues in the selection, design, manufacturing, and evaluation of biomaterials. Current applications, and emerging technologies.
Prerequisites: junior standing and MATLENG 201(P).
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 402 Physical Metallurgy
3 cr. Undergraduate/Graduate.
Crystal binding and electron theory of solids, phase diagrams, diffusion, nucleation and growth, recrystallization, precipitation hardening, solidification, austenite decomposition.
Prerequisites: jr st; MatlEng 201(P).
Last Taught: Spring 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 402G Physical Metallurgy
3 cr. Undergraduate/Graduate.
Crystal binding and electron theory of solids, phase diagrams, diffusion, nucleation and growth, recrystallization, precipitation hardening, solidification, austenite decomposition.
Prerequisites: jr st; MatlEng 201(P).
Last Taught: Spring 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 410 Mechanical Behavior of Materials
3 cr. Undergraduate/Graduate.
An introduction to the mechanical behavior of metals, ceramics, polymers and composite materials. Topics include elastic, plastic and viscoelastic deformation, fracture, fatigue, and creep.
Prerequisites: jr st; MatlEng 201(P); or grad st; or cons instr.
Last Taught: Fall 2020.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 410G Mechanical Behavior of Materials
3 cr. Undergraduate/Graduate.
An introduction to the mechanical behavior of metals, ceramics, polymers and composite materials. Topics include elastic, plastic and viscoelastic deformation, fracture, fatigue, and creep.
Prerequisites: jr st; MatlEng 201(P); or grad st; or cons instr.
Last Taught: Fall 2020.
Current Offerings: https://catalog.uwm.edu/course-search/
MATLENG 411 Materials Laboratory
3 cr. Undergraduate.
Experiments demonstrating the basic laws governing the processing, structure, and properties of materials.
Prerequisites: jr st; MATLENG 201(P).
Last Taught: Fall 2020, Fall 2019, Fall 2018, Fall 2017.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 431 Welding Engineering
3 cr. Undergraduate/Graduate.
An engineering course on joining processes; reaction of materials to welding, brazing and soldering; distortion; process and material selection and structural engineering considerations.
Prerequisites: jr st; MatlEng 201(P).
Last Taught: Spring 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 431G Welding Engineering
3 cr. Undergraduate/Graduate.
An engineering course on joining processes; reaction of materials to welding, brazing and soldering; distortion; process and material selection and structural engineering considerations.
Prerequisites: jr st; MatlEng 201(P).
Last Taught: Spring 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 443 Transport Phenomena in Materials Processing
3 cr. Undergraduate/Graduate.
A study of phenomena related to transport of mass, energy, and momentum with applications to materials processing.
Prerequisites: jr st, MatlEng 442(P); & ElecEng 234(P) or Math 234(P); or grad st.
Last Taught: Spring 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 443G Transport Phenomena in Materials Processing
3 cr. Undergraduate/Graduate.
A study of phenomena related to transport of mass, energy, and momentum with applications to materials processing.
Prerequisites: jr st, MatlEng 442(P); & ElecEng 234(P) or Math 234(P); or grad st.
Last Taught: Spring 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 452 Ceramic Materials
3 cr. Undergraduate/Graduate.
Ceramic bonding, crystallography and structure, defects and Brouwer diagram, mass and electrical transport of ceramics, phase equilibria, mechanical properties, and processing of ceramics including sintering.
Prerequisites: jr st, MatlEng 201(P); or grad st.
Course Rules: Not open for cr to students with cr in MatlEng 451(ER).
Last Taught: Fall 2020, Fall 2019.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 452G Ceramic Materials
3 cr. Undergraduate/Graduate.
Ceramic bonding, crystallography and structure, defects and Brouwer diagram, mass and electrical transport of ceramics, phase equilibria, mechanical properties, and processing of ceramics including sintering.
Prerequisites: jr st, MatlEng 201(P); or grad st.
Course Rules: Not open for cr to students with cr in MatlEng 451(ER).
Last Taught: Fall 2020, Fall 2019.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 453 Polymeric Materials
3 cr. Undergraduate/Graduate.
Structure, crystallinity of polymers, amorphous polymers and elastomers, synthesis method, polymerization, copolymerization, polymer characterization, polymer solutions, and viscoelasticity, deformation mechanics of polymers.
Prerequisites: junior standing, MATLENG 201 (P), and MATLENG 316(P) or MECHENG 301(P).
Course Rules: Not open for credit to students with credit in MATLENG 451(ER).
Last Taught: Spring 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 453G Polymeric Materials
3 cr. Undergraduate/Graduate.
Structure, crystallinity of polymers, amorphous polymers and elastomers, synthesis method, polymerization, copolymerization, polymer characterization, polymer solutions, and viscoelasticity, deformation mechanics of polymers.
Prerequisites: junior standing, MATLENG 201 (P), and MATLENG 316(P) or MECHENG 301(P).
Course Rules: Not open for credit to students with credit in MATLENG 451(ER).
Last Taught: Spring 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 456 Metal Casting Engineering
3 cr. Undergraduate/Graduate.
Pattern and core design; molding technology; pouring and feeding castings; metallurgy of cast engineering alloys and their foundry practice; casting design.
Prerequisites: jr st, MatlEng 201(P).
Course Rules: MatlEng 456(421) and MechEng 456 are jointly offered; they count as repeats of one another.
Last Taught: Fall 2020.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 456G Metal Casting Engineering
3 cr. Undergraduate/Graduate.
Pattern and core design; molding technology; pouring and feeding castings; metallurgy of cast engineering alloys and their foundry practice; casting design.
Prerequisites: jr st, MatlEng 201(P).
Course Rules: MatlEng 456(421) and MechEng 456 are jointly offered; they count as repeats of one another.
Last Taught: Fall 2020.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 457 Engineering Composites
3 cr. Undergraduate/Graduate.
Prerequisites: jr st, MatlEng 201(P).
Course Rules: MatlEng 457(455) & MechEng 457 are jointly offered; they count as repeats of each other.
Last Taught: Spring 2021.
Current Offerings: https://catalog.uwm.edu/course-search/
MATLENG 457G Engineering Composites
3 cr. Undergraduate/Graduate.
**Prerequisites:** jr st; MatlEng 201(P).
**Course Rules:** MatlEng 457(455) & MechEng 457 are jointly offered; they count as repeats of each other.
**Last Taught:** Spring 2021.
**Current Offerings:** https://catalog.uwm.edu/course-search/

MATLENG 460 Nanomaterials and Nanomanufacturing
3 cr. Undergraduate/Graduate.
Structure, properties, processing and manufacture of nanoparticles, nanotubes, nanofibers, bulk nanomaterials, nanocomposites including polymer, metal, ceramic, natural and biocomposites; nanofluidics, nanorheology, nanomachines, and nanotribology.
**Prerequisites:** jr st; MatlEng 201(P).
**Course Rules:** MatlEng 460 & MechEng 460 are jointly offered; they count as repeats of each other.
**Last Taught:** Spring 2021.
**Current Offerings:** https://catalog.uwm.edu/course-search/

MATLENG 460G Nanomaterials and Nanomanufacturing
3 cr. Undergraduate/Graduate.
Structure, properties, processing and manufacture of nanoparticles, nanotubes, nanofibers, bulk nanomaterials, nanocomposites including polymer, metal, ceramic, natural and biocomposites; nanofluidics, nanorheology, nanomachines, and nanotribology.
**Prerequisites:** jr st; MatlEng 201(P).
**Course Rules:** MatlEng 460 & MechEng 460 are jointly offered; they count as repeats of each other.
**Last Taught:** Spring 2021.
**Current Offerings:** https://catalog.uwm.edu/course-search/

MATLENG 461 Environmental Degradation of Materials
3 cr. Undergraduate/Graduate.
Technical and economic aspects of material degradation including corrosion and corrosion control. Forms of corrosion, other degradation mechanisms, thermodynamics, kinetics, materials, design, protection strategies.
**Prerequisites:** jr st; MatlEng 201(P).
**Last Taught:** Fall 2020.
**Current Offerings:** https://catalog.uwm.edu/course-search/

MATLENG 461G Environmental Degradation of Materials
3 cr. Undergraduate/Graduate.
Technical and economic aspects of material degradation including corrosion and corrosion control. Forms of corrosion, other degradation mechanisms, thermodynamics, kinetics, materials, design, protection strategies.
**Prerequisites:** jr st; MatlEng 201(P).
**Last Taught:** Fall 2020.
**Current Offerings:** https://catalog.uwm.edu/course-search/

MATLENG 465 Friction and Wear
3 cr. Undergraduate/Graduate.
Friction and wear of engineering materials. Effect of environment, surface interactions, lubrication, and material properties. Techniques of analysis and measurement.
**Prerequisites:** jr st; MatlEng 201(P).
**Course Rules:** Not open to students who have cr in MechEng 465, which is identical to MatlEng 465.
**Last Taught:** Spring 2021, Spring 2020.
**Current Offerings:** https://catalog.uwm.edu/course-search/

MATLENG 465G Friction and Wear
3 cr. Undergraduate/Graduate.
Friction and wear of engineering materials. Effect of environment, surface interactions, lubrication, and material properties. Techniques of analysis and measurement.
**Prerequisites:** jr st; MatlEng 201(P).
**Course Rules:** Not open to students who have cr in MechEng 465, which is identical to MatlEng 465.
**Last Taught:** Spring 2021, Spring 2020.
**Current Offerings:** https://catalog.uwm.edu/course-search/

MATLENG 471 Heat Treatment of Materials
3 cr. Undergraduate/Graduate.
Study of the heat treatment processes and their effect on the microstructure and properties of metals. Emphasis is on steels, but all alloy systems of importance are covered.
**Prerequisites:** jr st; MatlEng 201(P).
**Last Taught:** Fall 2020, Spring 2019.
**Current Offerings:** https://catalog.uwm.edu/course-search/

MATLENG 471G Heat Treatment of Materials
3 cr. Undergraduate/Graduate.
Study of the heat treatment processes and their effect on the microstructure and properties of metals. Emphasis is on steels, but all alloy systems of importance are covered.
**Prerequisites:** jr st; MatlEng 201(P).
**Last Taught:** Fall 2020, Spring 2019.
**Current Offerings:** https://catalog.uwm.edu/course-search/

MATLENG 481 Electronic Materials
3 cr. Undergraduate/Graduate.
**Prerequisites:** jr st; MatlEng 201(P) or cons instr.
**Course Rules:** MatlEng 481 and ElecEng 481 are jointly offered; they count as repeats of one another.
**Last Taught:** Spring 2020, Spring 2019.
**Current Offerings:** https://catalog.uwm.edu/course-search/
MATLENG 481G Electronic Materials
3 cr. Undergraduate/Graduate.
Prerequisites: jr st; MatlEng 201(P) or cons instr.
Course Rules: MatlEng 481 and ElecEng 481 are jointly offered; they count as repeats of one another.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 483 Materials for Energy Systems
3 cr. Undergraduate/Graduate.
Processing, structure, and properties of materials used in energy systems. Focus on materials applied to solid oxide fuel cells, photovoltaics, and advanced secondary batteries.
Prerequisites: jr st, MatlEng 201(P).
Last Taught: Fall 2020, Fall 2019.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 483G Materials for Energy Systems
3 cr. Undergraduate/Graduate.
Processing, structure, and properties of materials used in energy systems. Focus on materials applied to solid oxide fuel cells, photovoltaics, and advanced secondary batteries.
Prerequisites: jr st, MatlEng 201(P).
Last Taught: Fall 2020, Fall 2019.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 490 Senior Design Projects I
1 cr. Undergraduate.
Project identification and planning; proposals, project management, ethics, professional responsibilities, standards and team procedures. Written and oral engineering reports and proposals. For first semester seniors.
Prerequisites: sr st; MatlEng 411(C).
Last Taught: Fall 2020, Fall 2019, Fall 2018, Fall 2017.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 491 Senior Design Projects II
3 cr. Undergraduate.
Independent and team design projects under the direction of a faculty member. Written and oral engineering reports must be submitted on each design project undertaken.
Prerequisites: MatlEng 490(P).
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 511 Advanced Materials Characterization
3 cr. Undergraduate/Graduate.
Theory and operation of advanced materials characterization instrumentation including thermal analysis (TGA, DSC, DMA), XRD, SEM/EDS, FTIR/Raman, 3D confocal microscopy. Prereq: jr st & MatlEng 411(P).
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 511G Advanced Materials Characterization
3 cr. Undergraduate/Graduate.
Theory and operation of advanced materials characterization instrumentation including thermal analysis (TGA, DSC, DMA), XRD, SEM/EDS, FTIR/Raman, 3D confocal microscopy. Prereq: jr st & MatlEng 411(P).
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 585 Advanced Biomaterials
3 cr. Undergraduate/Graduate.
Theory and application of advanced biomaterials including cardiovascular devices, orthopedic applications, drug delivery systems, biosensors, and tissue engineering.
Prerequisites: sr st; MatlEng 385(P) or BME 385(P); or cons instr.
Course Rules: Jointly offered with & counts as repeat of BME 585.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 585G Advanced Biomaterials
3 cr. Undergraduate/Graduate.
Theory and application of advanced biomaterials including cardiovascular devices, orthopedic applications, drug delivery systems, biosensors, and tissue engineering.
Prerequisites: sr st; MatlEng 385(P) or BME 385(P); or cons instr.
Course Rules: Jointly offered with & counts as repeat of BME 585.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 690 Topics in Materials
3 cr. Undergraduate/Graduate.
Lectures on special topics in materials engineering and science.
Prerequisites: jr st; cons instr.
Course Rules: May be retaken w/chg in topic to max of 9 cr.
Last Taught: Fall 2019, Fall 2018.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 690G Topics in Materials
3 cr. Undergraduate/Graduate.
Lectures on special topics in materials engineering and science.
Prerequisites: jr st; cons instr.
Course Rules: May be retaken w/chg in topic to max of 9 cr.
Last Taught: Fall 2019, Fall 2018.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 699 Independent Study
1-3 cr. Undergraduate/Graduate.
Prerequisites: jr st; cons instr.
Course Rules: May be retaken to max of 6 cr applied toward undergraduate degree.
Last Taught: Summer 2021, Spring 2021.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 699G Independent Study
1-3 cr. Undergraduate/Graduate.
Prerequisites: jr st; cons instr.
Course Rules: May be retaken to max of 6 cr applied toward undergraduate degree.
Last Taught: Summer 2021, Spring 2021.
Current Offerings: https://catalog.uwm.edu/course-search/
MATLENG 700 CEAS Graduate Seminar
1-3 cr. Graduate.
Seminar in professional ethics, oral and written communication, contemporary social issues, career development, time management, and laboratory safety.
Prerequisites: grad st
Course Rules: Civ Eng 700, CompSci 700, ElecEng 700, Ind Eng 700, MatlEng 700 & MechEng 700 are jointly offered and count as repeats of one another
Last Taught: Fall 2020, Spring 2020, Fall 2019, Spring 2019.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 701 Properties of Solids
3 cr. Graduate.
The applications of physics to the understanding of the properties of solids, including lattice mechanics, band theory, electrical, thermal, magnetic, and defect properties.
Prerequisites: MatlEng 402(P)
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 702 Advanced Materials Thermodynamics
3 cr. Graduate.
Thermodynamics of materials including solutions, mixtures, and interfaces. Topics including statistical interpretation of entropy, chemical reactions, Ellingham diagrams, phase diagrams, and intermediate phases.
Prerequisites: grad st; MatlEng 442(P)
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 710 Advanced Mechanical Behavior of Materials
3 cr. Graduate.
Advanced topics on the mechanical properties of materials including plasticity, anelasticity, fracture, creep, fatigue, and the effects of temperature, rates, and processing history.
Prerequisites: grad st; MatlEng 410(P)
Last Taught: Spring 2021, Spring 2019, Fall 2017, Fall 2016.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 720 Kinetic Processes in Materials
3 cr. Graduate.
Absolute reaction rate theory, defects in materials, diffusion, phase transformation in metals.
Prerequisites: grad st; MatlEng 442(P)
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 731 Deformation Processing
3 cr. Graduate.
Application of engineering principles to shape generation by deformation processing. Analysis of forging, stamping, drawing. Effect of deformation material properties and behavior.
Prerequisites: grad st; MatlEng 410(P)
Last Taught: Fall 2019, Fall 2017, Fall 2004.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 732 Solidification Processing
3 cr. Graduate.
Solidification phenomena and its engineering application to metals, semiconductors, ceramics, properties of cast products. Foundry processes.
Prerequisites: grad st; Matleng 330(P)
Course Rules: MatlEng 732 and MechEng 732 are jointly offered; they count as repeats of each other.
Last Taught: Fall 2018, Fall 2016, Fall 2014, Spring 2013.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 740 Heterogeneous Equilibria
3 cr. Graduate.
Quantitative description of heterogeneous equilibria for unary, binary, and ternary systems from the thermodynamic point of view; composite systems and current experimental techniques in high temperature materials.
Prerequisites: grad st; MechEng 301(P); MatlEng 201(P)
Last Taught: Fall 2013, Fall 2011, Fall 2009, Spring 2008.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 750 Thin Solid Films
3 cr. Graduate.
Prerequisites: grad st or cons instr.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 760 Surface Analysis of Solids
3 cr. Graduate.
Prerequisites: grad st or cons instr.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 880 Bioengineering Seminar
1 cr. Graduate.
Presentations by bioengineering affiliated faculty, invited speakers, and graduate students.
Prerequisites: grad st
Course Rules: MechEng 880, ElecEng 880, CompSci 880, MatlEng 880, Ind Eng 880 & Civ Eng 880 are jointly offered and count as repeats of one another. May be repeated to 3 cr. max.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 888 Candidate for Degree
0 cr. Graduate.
Available for graduate students who must meet minimum credit load requirements.
Prerequisites: graduate standing.
Course Rules: Fee for 1 cr assessed; unit does not count towards credit load for Fin Aid. Repeatable. Satisfactory/Unsatisfactory only.
Current Offerings: https://catalog.uwm.edu/course-search/
MATLENG 890 Advanced Topics in Materials:
3 cr. Graduate.
Lectures on special topics in materials engineering and science.
Prerequisites: graduate standing; consent of instructor.
Course Rules: May be repeated with change in topic to max of 9 cr.
Last Taught: Fall 2018, Fall 2015, Spring 2011, Fall 1987.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 990 Masters Thesis
1-9 cr. Graduate.
Prerequisites: grad st; cons instr.
Last Taught: Summer 2021, Spring 2021, Fall 2020, Summer 2020.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 998 Doctoral Thesis
1-12 cr. Graduate.
Prerequisites: grad st; cons instr.
Last Taught: Summer 2021, Spring 2021, Fall 2020, Summer 2020.
Current Offerings: https://catalog.uwm.edu/course-search/

MATLENG 999 Advanced Independent Study
1-3 cr. Graduate.
Prerequisites: grad st; cons instr & grad prog committee.
Current Offerings: https://catalog.uwm.edu/course-search/