NAU Course Audit: Expanded AI Candidates

Kaleb Coleman

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Overview

This document lists the 94 "Broad AI Candidates" identified during the NAU course catalog audit. This recall-first list includes the 21 high-confidence AI courses as well as additional candidates. Some entries are keyword-only matches or AI-adjacent topics, which is why the broad list is kept separate from the core list.

For non-core entries, a **match note** is shown in brackets. If the note says "fuzzy match," it means the course did not match an exact keyword but was picked up by fuzzy matching for a close variant.

Core AI Courses (High-Confidence)

BAN 518: E-commerce Analytics And Strategy (AI)

An overview of how business analytics can empower key e-commerce strategies, including but not limited to e-commerce infrastructure, web scraping, product/supplier research, web analytics, online review systems, advertising/promotion, e-commerce issues/crises, and artificial intelligence in e-commerce. Letter grade only.

CIT 460: Emerging Technologies In Information Technology (AI)

This course introduces students to the concepts of technology innovation and evolution applicable to the information technology and business industry. Learners will explore general topics on emerging technologies topics such as the social and economic implications of technology, a view on virtual reality and artificial intelligence, as well as effects of information technology on the media and entertainment industry. The course will also explore decision theories, systematic approaches and methodologies to get an understanding on how it relates to day-to-day business operations. Students will also explore generally accepted practices in risk management, standards and ethics, countermeasures and mitigation strategies that are critical in today's business. Letter grade only.

CS 102: Artificial Intelligence Literacy (AI)

This course, for students of any major, introduces students to the fundamental concepts of artificial intelligence (AI), its applications, and its implications on society. It covers the basics of machine learning, data analytics, AI tools, improving productivity with AI, AI bias and limitations, ethical implications, and responsible AI use. Students will gain insights into the current state of AI technology and its potential future developments. Letter grade only.

CS 413: Virtual Worlds (AI)

Explores the data modeling, visualization, and simulation of abstract environments. Topics include data organization, freeform and tile-based 2D and 3D graphics techniques, collision physics, AI, and networked game infrastructures. Letter grade only.

CS 413H: Virtual Worlds - Honors (AI)

Explores the data modeling, visualization, and simulation of abstract environments. Topics include data organization, freeform and tile-based 2D and 3D graphics techniques, collision physics, AI, and networked game infrastructures. Letter grade only.

CS 470: Artificial Intelligence (AI)

Introduces fundamental principles of artificial intelligence, including knowledge representation, planning, game playing, learning, and genetic algorithms. Co-convened with CS 570. Letter grade only.

CS 470H: Artificial Intelligence - Honors (AI)

Introduces fundamental principles of artificial intelligence, including knowledge representation, planning, game playing, learning, and genetic algorithms. Letter grade only.

CS 472: Unsupervised Machine Learning (AI)

Machine Learning and Artificial Intelligence have become ubiquitous parts of modern society. This course, an extension of CS470, explores the topic of unsupervised learning - when data may not be labeled to support supervised learning methods. Such topics include clustering, Gaussian mixture models, change point detection, and dimensional reduction. Co-convened with CS 572. Letter grade only.

CS 570: Advanced Intelligent Systems (AI)

Introduces fundamental principles of artificial intelligence, as well as exploration of current research themes and challenges in areas including knowledge representation, planning, game playing, learning, and genetic algorithms. Co-convened with CS 470. Letter grade only.

CS 572: Unsupervised Machine Learning (AI)

Machine Learning and Artificial Intelligence have become ubiquitous parts of modern society. This course, an extension of CS570, explores the topic of unsupervised learning - when data may not be labeled to support supervised learning methods. Such topics include clustering, Gaussian mixture models, change point detection, and dimensional reduction. Co-convened with CS 472. Letter grade only.

CS 573: Interpretable Machine Learning (AI)

This course introduces students to interpretable machine learning algorithms, which can be used to make accurate predictions from big data sets, while being interpretable in terms of what properties of the data are most important or relevant for making the prediction. Topics include sparse linear models (greedy selection and L1 regularization), decision trees, nearest neighbors, and model-agnostic methods which can be used to interpret predictions of any learning algorithm (such as neural networks). Letter grade only.

EE 443: Foundations Of Intelligent Systems (AI)

Survey of techniques for identifying patterns present in noisy signal and image data. Includes classifiers, discriminant functions, Bayesian decision theory., maximum likelihood, K-means, relaxation, neural networks, and machine learning. Letter grade only.

EE 543: Pattern Recognition (AI)

Survey of techniques for identifying patterns present in noisy signal and image data. Includes classifiers, discriminant functions, Bayesian decision theory, maximum likelihood, K-means, relaxation, neural networks, and machine learning. Co-convened with EE 443. Letter grade only.

ETC 767: Research In Learning Analytics & Artificial Intelligence (AI)

This course is designed to empower educators, instructional designers, data analysts, and technology enthusiasts by equipping them with the necessary knowledge and skills to effectively utilize learning analytics and generative AI technologies within the field of education. In response to the evolving educational landscape, the course seeks to meet the increasing significance of data and emerging technologies in enhancing learning experiences. Participants will delve into the convergence of learning analytics and generative AI, traversing through diverse phases of analysis, interpretation, and practical application. Through this exploration, individuals will gain insights into harnessing the potential of these technologies to optimize educational practices and outcomes in contemporary learning environments. Letter grade only.

INF 504: Data Mining And Machine Learning (AI)

Study of machine learning principles with a focus on uncertainty modeling, Bayesian inference, graphical models for complex inference problems, computational inference including message passing and Markov Chain Monte Carlo, and open research questions. Letter grade only.

INF 586: Data Analytics Capstone (AI)

This course serves as a hands-on, project-based studio where students apply computational and applied data science techniques to real-world datasets. The course emphasizes problem-solving, data-driven decision-making, and visualization techniques within interdisciplinary applications, such as bioinformatics, eco-informatics, astroinformatics, and health informatics. Students will work in teams to analyze large-scale datasets, develop machine learning models, and present actionable insights. Letter grade only.

MRE 372: Introduction To Probability And Machine Learning (AI)

This course will introduce fundamental concepts of statistics and probability, as well as their application to deep machine learning, and the deployment of the latter toward solving scientific and engineering problems. PyTorch, an open-source software package in Python, will be used in the course to develop deep learning algorithms. Letter grade only.

PRM 165: Ai And The Future Of Fun (AI & Ethics)

AI and the Future of Fun is a 3-credit course examining how artificial intelligence is changing the very nature of leisure. As AI enables new forms of creativity, travel, gaming, and more, it also raises questions about the technology's broader social impact. The course will explore how AI-powered systems may increase accessibility and personalization of recreational experiences while potentially displacing human roles. Students will learn technical foundations alongside ethical issues like privacy, bias, and job loss. Our leisure time is among our most personal spaces; the course investigates this human-AI intersection so we can shape recreational futures with eyes wide open to both profound promise and pitfalls. The very meaning of fun itself may transform - examining this key part of the human experience will shed light on deeper changes afoot. Beyond receiving practical skills, students will contemplate and discuss what it means to be human in an increasingly automated world where recreation is ever more entwined with intelligent machines. This course is open to all students from any major. Letter grade only.

PSY 305: Data Science And Ai In Psychology (AI)

Examines the role of data science, artificial intelligence, and "big data" in the field of psychology and the implications for research, ethics, and psychology careers. Letter grade only.

PSY 305H: Data Science And Ai In Psychology - Honors (AI)

Examines the role of data science, artificial intelligence, and "big data" in the field of psychology and the implications for research, ethics, and psychology careers. Letter grade only.

PSY 628: Research Dissemination Skills In The Psychological Sciences (AI)

This graduate course draws on best practices within the psychological sciences that informs effective written, computational, and visual data dissemination skills. The course also focuses on practical methods of disseminating basic and applied psychological research findings for a variety of professional and community audiences for whom psychological research findings have impact. Course topics include how to transform statistical results into engaging visualizations for professional outlets (publication, grant applications), community-based dissemination goals (e.g., community-based organization), and professional workflow platforms (e.g., OSF). Impact of generative AI services on dissemination processes will also be discussed. Students will have opportunities to strengthen and practice written and visual dissemination skills. R programming language will be required for some assignments. Letter grade only.

AI-Adjacent Highlights

ART 376: New Media: Physical Computing And Robotics [match: data mining, robotics]

Studio Course. Students will explore interactive technologies. This course will focus on physical computing, robotics, and other interactive technologies Each project will emphasize artistic expression over technical demonstration. Students will work primarily in the Processing and Arduino Integrated Development Environments but will also be exposed to a variety of different tools. Students will also engage with data mining, web-scraping, and other generative art forms. Access to a personal desktop or laptop is highly recommended for this course. Letter grade only. May be repeated for a total of 6 units.

BAN 440: Applied Business Intelligence [match: data mining]

Data analytics for business intelligence and decision making. Topics include the use of historical business data for quantitative analysis, data mining, predictive modeling, data warehousing, reporting, and decision making techniques, encompassing functional areas like marketing and finance. Co-convened with BAN 540. Letter grade only.

EE 442: Image Processing [match: image processing]

Surveys digital image-processing techniques. Topics include image representation, contrast manipulation, spatial filtering, edge detection, shape description, texture, noise suppression, warping, clustering, classification, and color image processing. Co-convenes with EE 542. Letter grade only.

EE 526: Random Signals And Systems [match: image processing]

Characterization of random phenomena in engineered systems. Discrete- and continuous-parameter probabilistic models. Electrical noise. Detection and estimation. Applications is signal/image processing, communication, networking and control. Requires knowledge of signals and systems. Letter grade only.

ME 542: Applied Robotics Controls [match: robotics]

Advanced investigation of robot dynamics and control, with special emphasis on healthcare, human-machine interactions, manufacturing, and transportation. Co-convened with MRE 471. Letter grade only.

MRE 471: Applied Robotics Controls [match: robotics]

Advanced investigation of robot dynamics and control, with special emphasis on healthcare, human-machine interactions manufacturing, and transportation. Co-convenes with ME 571. Letter grade only.

Broad Candidates (Non-Core)

ACC 448: Data Analytics In Accounting [match: data mining]

Survey course of data analytics topics with a focus on accounting-specific business problems. Students will develop a framework for evaluating when and how business data may be used to address accounting-related questions using data analytics. Topics will include the ETL (extract, transform, load) process, quantitative analysis, data mining, predictive and prescriptive modeling, other advanced analytics techniques unique to the accounting field. This course requires the use of various software - a laptop that runs either a Windows or MAC OS operating system is required to complete the course. Letter grade only.

ACC 448H: Data Analytics In Accounting - Honors [match: data mining]

Survey course of data analytics topics with a focus on accounting-specific business problems. Students will develop a framework for evaluating when and how business data may be used to address accounting-related questions using data analytics. Topics will include the ETL (extract, transform, load) process, quantitative analysis, data mining, predictive and prescriptive modeling, other advanced analytics techniques unique to the accounting field. This course requires the use of various software - a laptop that runs either a Windows or MAC OS operating system is required to complete the course. Letter grade only.

BAN 450: Data And Text Mining For Business Analytics [match: data mining]

Data and text mining for business analytics and decision making. Topics including data mining, text mining, sentiment analysis, social network analysis and model evaluation. Encompassing functional areas like marketing and finance. This course is a continuation of BAN 440 Applied Business Intelligence. Co-convened with BAN 550. Letter grade only.

BAN 450H: Data And Text Mining For Business Analytics - Honors [match: data mining]

Data and text mining for business analytics and decision making. Topics including data mining, text mining, sentiment analysis, social network analysis and model evaluation. Encompassing functional areas like marketing and finance. This course is a continuation of BAN 440 Applied Business Intelligence. Letter grade only.

BAN 540: Applied Business Intelligence [match: data mining]

Data analytics for business intelligence and decision making. Topics include the use of historical business data for quantitative analysis, data mining, predictive modeling, data warehousing, reporting, and decision making techniques, encompassing functional areas like marketing and finance. Co-convened with BAN 440. Letter grade only.

BAN 550: Data And Text Mining For Business Analytics [match: data mining]

Data and text mining for business analytics and decision making. Topics including data mining, text mining, sentiment analysis, social network analysis and model evaluation. Encompassing functional areas like marketing and finance. This course is a continuation of BAN 540 Applied Business Intelligence. Co-convened with BAN 450. Letter grade only.

CCHE 688: College Teaching [fuzzy match: machine learning]

Teaching-learning and administrative environment in college; student culture, learning theory, classroom procedures. Letter grade only.

CENE 150: Civil And Environmental Engineering For A Sustainable Future [match: data science]

This course introduces the civil and environmental engineering professions and the issues that drive the technical innovations and solutions by these professions. The intersection between how these professions impact society is explored using perspectives that connect historical and present-day practices with the future expertise to meet future challenges. Lessons learned by the profession are examined in relation to the commitment that has emerged for sustainable engineering solutions that successfully include social, cultural, economic, environmental, legal, policy, public health, political, data science, and systems analysis. Letter grade only.

CENE 546: Intelligent Transportation Systems [fuzzy match: intelligent agent]

This course will present of a survey of various Intelligent Transportation System (ITS) technologies. Students will be required to take part in various field surveys of Intelligent Transportation System deployments, as well as develop and complete an individual ITS project design. Letter grade only.

CENE 666: Intelligent Water Management [fuzzy match: intelligent agent]

Current and emerging concepts in modernizing water infrastructures using smart networks, remote telemetry and IoTs-enabled devices, and big data software that can lead to optimizing water systems management and maintenance, and to reduced costs. Letter grade only.

CIT 121: Foundations Of Computer Information Technology [match: decision support]

Foundations of computer information technology, including the development and practical use of applications designed for communications/ decision support and database management. Letter grade only.

CIT 127: Computer Information Technology I [fuzzy match: computer vision]

This course presents a basic introduction to computer concepts - computer input, output, storage devices, how to install software, internet, World Wide Web, and basic networking. Students will also work on software and internet. Letter grade only.

CIT 137: Computer Information Technology II [fuzzy match: computer vision]

This course is designed to introduce advanced concepts, principles, and applications of computing as they apply to business and organizational structures. This class teaches several common software packages available for business applications and with a focus on business intelligence. Letter grade only.

CIT 490C: Computer Information Technology Capstone [fuzzy match: computer vision]

This capstone should demonstrate achievement of the learning goals as established by the Computer Information Technology degree program by completing a technology research paper. The research paper should fully explore multiple aspects related to a specific information technology area of study or industry profession. Letter grade only.

CIT 502: Organizational Impact Of Information Technology [match: decision support]

This course examines the impact of technology on contemporary business entities including how information technology supports managerial decision making, the cross functional nature of information technology, managerial communications skills, and the ethical considerations associated with using information technology in business organizations. Students will also examine communications techniques, valuing IT, valuing data and its role in business organizations, database concepts, and decision support systems. A foundational understanding of technology's impact on business organizations is important to students' learning as technology is pervasive, is a strategic component of most business operations, and requires multiple perspectives on technology to reap the benefits afforded by technology. Students will build upon this course during the

remainder of their program by learning about technology innovations and globalization afforded by technology. Letter grade only.

CIT 611: Project Planning & Scheduling [fuzzy match: deep learning]

This course examines project planning and project scheduling concepts such as specifying project scope, time management, project schedule, work breakdown structure, project scheduling tools, transition planning, and how those concepts are applied to the domain of information technology. As project plans and project schedules serve as a detailed map for the entire project, developing effective project plans and project schedules is critical to the success of projects, and is increasingly important in the information technology domain given the inherent complexities of projects in the domain. In addition, this course builds upon student learning in CIT 610 by introducing students to the project planning and scheduling components of the Project Management Institute's PMBOK® framework. Students will apply their knowledge and skills by creating project scope and transition plan documents for an information technology project following the specifications defined in the Project Management Institute's PMBOK® framework. Students will build upon this course during the remainder of their program by exploring additional Project Management Institute PMBOK® framework components. Letter grade only.

CIT 612: Project Communications, Leadership, And Stakeholder Management [fuzzy match: deep learning]

This course examines project communications, leadership, and stakeholder management concepts such as human capital management, motivation, conflict management, team building, communications tools, and how those concepts are applied to the domain of information technology. Communications, leadership, and stakeholder management skills play an important role in the success of projects and are increasingly important to the information technology domain where technology-infused projects are inherently complex. In addition, this course builds upon student learning in CIT 611 by introducing students to project communications, leadership, and stakeholder management components of the Project Management Institute's PMBOK® framework. Students will apply their knowledge and skills by creating a communications plan document for an information technology project following the specifications defined in the Project Management Institute's PMBOK® framework. Students will build upon this course during the remainder of their program by exploring additional Project Management Institute PMBOK® framework components. Letter grade only.

CIT 613: Project Risk And Cost Management [fuzzy match: deep learning]

This course examines project risk and cost management concepts such as cost identification and classification, cost estimating, risk and opportunity identification, risk evaluation, and how those concepts are applied to the domain of information technology. Project risk and cost management skills play an important role in the success of projects and are increasingly important to the information technology domain where technology-infused projects are inherently complex. In addition, this course builds upon student learning in CIT 612 by introducing students to project risk and cost management components of the Project Management Institute's PMBOK® framework. Students will apply their knowledge and skills by creating cost management pan and risk management plan documents for an information technology project following the specifications defined in the Project Management Institute's PMBOK® framework. Students will build upon this course during the remainder of their program by exploring additional Project Management Institute PMBOK® framework components. Letter grade only.

CIT 614: Project Procurement, Change Control, Quality Assurance, & Project Closure [fuzzy match: deep learning]

This course examines the processes associated with project procurement, project change control, project quality assurance, and project closure concepts such as procurement types and processes, change documentation and assessment, change mitigation, quality management tools and theories, project closure techniques, and how those concepts are applied to the domain of information technology. Project procurement, project change control, project quality assurance, and project closure skills play an important role in the success of projects

and are increasingly important to the information technology domain where technology-infused projects are inherently complex. In addition, this course builds upon student learning in CIT 613 by introducing students to project procurement, project change control, project quality assurance, and project closure components of the Project Management Institute's PMBOK® framework. Students will apply their knowledge and skills by creating quality management and project closure plan documents for an information technology project following the specifications defined in the Project Management Institute's PMBOK® framework. Students will build upon this course in the masters project course CIT 691 by applying project management skills to a comprehensive information technology project to demonstrate mastery of learning. Letter grade only.

CIT 644: Data Mining [match: data mining]

The course investigates advanced concepts and principles of data mining within the statistical analysis framework. Students will extend their ability to participate in cross-disciplinary collaborations and will obtain a foundation for more advanced training in the diverse areas of data analytics and statistical analysis. The curriculum of the Data Mining course is flexible to facilitate integration with the curricula of the program and ensure educational development that is appropriate to individual student success. Students will be introduced to using scholarly resources and engaging in scholarly research to discover current research trends and outcomes in IT. This course is an important component of the MCIT program and prepares students for the remainder of their program. Those serving in supervisory and managerial roles in the IT domain need a broad understanding of analytics and how data effects decisions in organizations. Students will build upon this course during the remainder of their program by exploring additional IT topics more deeply and by learning how to engage in research within the IT domain. Letter grade only.

CIT 694: Big Data Analytics Master's Project [match: data science]

This course provides a culminating experience for MCIT students specializing Big Data Analytics. Students consult with their faculty mentor to propose, research, and report a major data analytics project to demonstrate what they learned throughout their program. Synthesizing their learning in earlier course requirements in data analytics, students will demonstrate their skills associated with Big Data Analytics. Students will engage in a complete process of solving a real-world data science project; from collecting and processing data to applying suitable and appropriate analytic methods. As part of the demonstration of learning, students will prepare an executive summary of the project highlighting key components such as the technical problem and solution, stakeholders, technologies used, and processes applied in the solution implementation. Using the executive summary as a guide, students will engage in an oral defense of their information technology project design with their faculty mentor demonstrating the student's readiness to take on the roles associated with mobile and Web application developers. Letter grade only.

ECI 321: Elementary School Curriculum [fuzzy match: deep learning]

Candidates plan developmentally appropriate instruction that includes the pedagogies for teaching various content areas. They design classroom contexts for learning, and create appropriate assessments, in light of the theoretical frameworks concerning curricular knowledge. Candidates differentiate instructional designs to meet the needs of diverse students in the classroom, including modifications and accommodations. Students facilitate the establishment of the learning environment including classroom management while taking into account professional responsibilities and ethical conduct. This course contains an assessment that must be successfully completed in order to move toward student learning. Letter grade only.

ECI 321H: Elementary School Curriculum - Honors [fuzzy match: deep learning]

Candidates plan developmentally appropriate instruction that includes the pedagogies for teaching various content areas. They design classroom contexts for learning, and create appropriate assessments, in light of the theoretical frameworks concerning curricular knowledge. Candidates differentiate instructional designs to meet the needs of diverse students in the classroom, including modifications and accommodations. Students facilitate the establishment of the learning environment including classroom management while taking into

account professional responsibilities and ethical conduct. This course contains an assessment that must be successfully completed in order to move toward student learning. Letter grade only.

ECI 330: Evaluation Of Learning: Elementary [fuzzy match: deep learning]

This course will help students to develop the knowledge, skills, and dispositions necessary to effectively assess, evaluate and monitor student learning and growth in grades K-8 in a professionally responsible and ethical manner. These include understanding data literacy as a guide to decision making; examining a variety of formal and informal assessments; evaluating their relative merits and limitations; understanding the concepts of validity and reliability; and formulating an initial assessment philosophy that recognizes the social and political milieu of schooling as well as classroom students with exceptionalities. Letter grade only.

ECI 402: Integrated Lit I: Dev Literacy, Evidence-based Practices, And Language Arts In The Elementary School [fuzzy match: deep learning]

Informed by the Science of Reading, this course introduces the candidate to teaching language and literacy development processes for children's language acquisition and emergent literacy from birth through third grade. Focus includes research-based instructional strategies to develop competences for phonological awareness, systematic phonics, fluency, vocabulary, and comprehension. Emphasis is placed on developing professional responsibilities and ethical conduct that supports a learning environment, including classroom management. Where candidates are exposed to developmentally appropriate instructional design and lesson planning with appropriate accommodations and modifications while assessing, monitoring, and reporting progress for diverse student populations including those with exceptionalities through facilitation and methodologies for teaching language. This course contains an assessment that must be successfully completed in order to move toward student learning. Co-convened with ECI 502. Letter grade only.

ECI 402H: Integrated Lit I: Dev Literacy, Evidence-based Practices, & Lang Arts In The Elem School - Honors [fuzzy match: deep learning]

Informed by the Science of Reading, this course introduces the candidate to teaching language and literacy development processes for children's language acquisition and emergent literacy from birth through third grade. Focus includes research-based instructional strategies to develop competences for phonological awareness, systematic phonics, fluency, vocabulary, and comprehension. Emphasis is placed on developing professional responsibilities and ethical conduct that supports a learning environment, including classroom management. Where candidates are exposed to developmentally appropriate instructional design and lesson planning with appropriate accommodations and modifications while assessing, monitoring, and reporting progress for diverse student populations including those with exceptionalities through facilitation and methodologies for teaching language. This course contains an assessment that must be successfully completed in order to move toward student learning. Letter grade only.

ECI 403: Integrated Lit II: Reading Theory, Decoding, Evidence-based Practices, And Lang Arts In The Elem Sch [fuzzy match: deep learning]

Informed by the Science of Reading, this course introduces the candidate to teaching language and literacy development processes in language arts for children from kindergarten through eighth grade and across content areas. Focus includes research-based instructional strategies to develop competences for differentiated reading instruction of systematic phonics, fluency, comprehension, writing, and language arts. Emphasis is placed on developing professional responsibilities and ethical conduct that supports a learning environment, including classroom management. Where candidates are exposed to developmentally appropriate instructional design and lesson planning with appropriate accommodations and modifications while assessing, monitoring, and reporting progress for diverse student populations including those with dyslexia and/or exceptionalities through facilitation and methodologies for teaching language. This course contains an assessment that must be successfully completed in order to move toward student learning. Co-convened with ECI 503. Letter grade only.

ECI 403H: Integrated Lit II: Reading Theory, Decoding, Evidence-based Practices, And Lang Arts In The Elem Sch [fuzzy match: deep learning]

Informed by the Science of Reading, this course introduces the candidate to teaching language and literacy development processes in language arts for children from kindergarten through eighth grade and across content areas. Focus includes research-based instructional strategies to develop competences for differentiated reading instruction of systematic phonics, fluency, comprehension, writing, and language arts. Emphasis is placed on developing professional responsibilities and ethical conduct that supports a learning environment, including classroom management. Where candidates are exposed to developmentally appropriate instructional design and lesson planning with appropriate accommodations and modifications while assessing, monitoring, and reporting progress for diverse student populations including those with dyslexia and/or exceptionalities through facilitation and methodologies for teaching language. This course contains an assessment that must be successfully completed in order to move toward student learning. Letter grade only.

ECI 405: Mathematics And Evidence-based Practices In The Elementary School [fuzzy match: deep learning]

ECI 405 is designed to prepare teacher candidates to provide meaningful and developmentally appropriate mathematical instruction for elementary and middle school children. Intentional planning for instruction, the interrelated nature of assessment and instruction, and the diverse needs of learners (including a focus on modifications, accommodations, and students with exceptionalities) are addressed through class discussions, activities and assignments. Strategies for creating a positive and productive mathematics learning environment are explored, including methods of classroom management. An assessment within this course must be successfully completed in order to register for student teaching. Developmentally appropriate/effective instructional delivery, facilitation, and methodologies are outlined in regard to the content of the course. Professional responsibility and ethical conduct are reinforced. This course contains an assessment that must be successfully completed in order to move toward student learning. Co-convened with ECI 505. Letter grade only.

ECI 405H: Mathematics And Evidence-based Practices In The Elementary School - Honors [fuzzy match: deep learning]

ECI 405 is designed to prepare teacher candidates to provide meaningful and developmentally appropriate mathematical instruction for elementary and middle school children. Intentional planning for instruction, the interrelated nature of assessment and instruction, and the diverse needs of learners (including a focus on modifications, accommodations, and students with exceptionalities) are addressed through class discussions, activities and assignments. Strategies for creating a positive and productive mathematics learning environment are explored, including methods of classroom management. An assessment within this course must be successfully completed in order to register for student teaching. Developmentally appropriate/effective instructional delivery, facilitation, and methodologies are outlined in regard to the content of the course. Professional responsibility and ethical conduct are reinforced. This course contains an assessment that must be successfully completed in order to move toward student learning. Co-convened with ECI 505. Letter grade only.

ECI 407: Social Studies And Evidence-based Practices In The Elementary School [fuzzy match: deep learning]

Role, objectives, and content of the social studies curriculum as well as methodology, selection of materials, and evaluation of social studies learning. Candidates engage in developmentally appropriate instructional delivery, facilitation and methodologies for teaching social studies and the arts. Candidates develop skills related to instructional design and lesson planning, including modifications, and accommodations. Students facilitate the establishment of the learning environment, including classroom management. This course contains an assessment that must be successfully completed in order to register for student teaching. Co-convened with ECI 507. Letter grade only.

ECI 407H: Social Studies And Evidence-based Practices In The Elementary School - Honors [fuzzy match: deep learning]

Role, objectives, and content of the social studies curriculum as well as methodology, selection of materials, and evaluation of social studies learning. Candidates engage in developmentally appropriate instructional delivery, facilitation and methodologies for teaching social studies and the arts. Candidates develop skills related to instructional design and lesson planning, including modifications, and accommodations. Students facilitate the establishment of the learning environment, including classroom management. This course contains an assessment that must be successfully completed in order to register for student teaching. Letter grade only.

ECI 417: Social Studies And Evidence-based Practices In Elementary Settings-learning And Pedagogy [fuzzy match: deep learning]

Role, objectives, and content of a social studies curriculum as well as methodology, selection of materials, and evaluation of social studies learning. Students engage in developmentally appropriate instructional delivery, facilitation and methodologies for teaching social studies and the arts in elementary settings. Students develop skills related to instructional design and lesson planning, including modifications, and accommodations. Students facilitate the establishment of the learning environment. Letter grade only.

ECI 507: Graduate Social Studies And Evidence-based Practices In Elementary School [fuzzy match: deep learning]

Role, objectives, and content of the social studies curriculum as well as methodology, selection of materials, and evaluation of social studies learning. Candidates engage in developmentally appropriate instructional delivery, facilitation and methodologies for teaching social studies and the arts. Candidates develop skills related to instructional design and lesson planning, including modifications, and accommodations. Students facilitate the establishment of the learning environment, including classroom management. Contains an assessment that must be successfully completed in order to move toward student teaching. Co-convened with ECI 407. Letter grade only.

EDR 611: Action Research [fuzzy match: machine learning]

Theory and methods for conducting action research in teaching-learning environments. Emphasizes self-reflection, qualitative data collection and interpretation, and role in individual and institutional change. Letter grade only.

EDU 307: Social Studies In The Elementary School [fuzzy match: deep learning]

Role, objectives, and content of the social studies curriculum as well as methodology, selection of materials, and evaluation of social studies learning. Available only at NAU-Yuma Branch campus. Letter grade only.

EDU 312: Curriculum And Assessment In Early Childhood Education [fuzzy match: deep learning]

This course examines comprehensive systems of curriculum, instruction, assessment, documentation, monitoring and reporting appropriate for early learning that challenge, engage and support the diverse learning characteristics and needs of young children. Considers ways in which to make assessment a central part of early learning experiences. Letter grade only.

EDU 436: Foundations In Early Childhood Special Education [fuzzy match: deep learning]

This course will survey historical, social, and legal foundations of special education in early childhood. Typical and atypical growth and behavior in domains of language/literacy, cognitive, emotional, physical, and adaptive will be examined. Focus on interdisciplinary, professional collaboration among educators, psychologists, child specialists, therapists, and family to create learning environments that match strengths and promote optimal growth.

EE 326: Applications Of Probability Theory And Stochasticity In Electrical Engineering [fuzzy match: deep learning]

This course provides learning opportunities in the areas of probability theory and stochastic processes as applied to electrical systems. It teaches engineering science through the application of fundamental statistical principles to engineering problems by focusing on the introductory treatment of probability theory including axioms of probability, discrete and continuous random variables, conditional and cumulative probability distributions, expectations, and correlations. Applications of primary focus are drawn from problems of importance to electrical and computer engineers. Students will learn these topics through such methods as statistical analysis of signal processing with applications to image and speech signals and the modeling of noise when considering communication systems design. Letter grade only.

EE 403: Electric Drives [match: robotics]

AC/DC electric-machine drives for speed/position control. Integrated discussion of electric machines, power electronics, and control systems; power electronic converters for DC and AC motors, electromechanical energy conversion, design, construction, operation and control of DC, induction, permanent magnet, stepper and switched reluctance motors; feedback controller design for motor drives and applications in electric transportation, robotics, process control, and energy conservation. 2 hours lecture, 3 hours lab. Co-convened with EE 503. Letter grade only.

EE 503: Advanced Electric Drives [match: robotics]

Advanced AC/DC electric-machine drives for speed/position control. Integrated discussion of electric machines, power electronics, and control systems; power electronic converters for DC and AC motors, electromechanical energy conversion, design, construction, operation and control of DC, induction, permanent magnet, stepper and switched reluctance motors; feedback controller design for motor drives, and applications in electric transportation, robotics, process control, and energy conservation. 2 hours lecture, 3 hours lab. Co-convened with EE 403. Letter grade only.

EE 542: Image Processing [match: image processing]

Surveys digital image-processing techniques. Topics include image representation, contrast manipulation, spatial filtering, edge detection, shape description, texture, noise suppression, warping, clustering, classification, and color image processing. Co-convenes with EE 442. Letter grade only. Prerequisites: EE 448 and one of EE 222, CS 122, or CS 126.

ENG 300: Current Trends And Theories In The Teaching Of English [fuzzy match: deep learning]

This course focuses on trends and theories in the areas of secondary English Language Arts instruction, including curriculum design, lesson planning, academic standards, gamification digital literacy, assessment, and classroom management; with a particular focus on how curriculum design and methods have an impact on student learning outcomes. This course contains an assessment that must be successfully completed in order to register for student teaching. Letter grade only.

ENG 300H: Current Trends And Theories In The Teaching Of English - Honors [fuzzy match: deep learning]

This course focuses on trends and theories in the areas of secondary English Language Arts instruction, including curriculum design, lesson planning, academic standards, gamification digital literacy, assessment, and classroom management; with a particular focus on how curriculum design and methods have an impact on student learning outcomes. This course contains an assessment that must be successfully completed in order to register for student teaching. Letter grade only.

EPS 605: Educational Psychology Applied To Learning [fuzzy match: deep learning]

Theories and principles including those of (a) behavioral, (b) social, and (c) cognitive, as they apply to issues of learning, motivation, and cognitive development. Topics include learning, memory, cognition, and problem solving. Letter grade only.

ETC 787: Advances In Networked Learning Research: Theory, Analytics, And Implementation [fuzzy match: deep learning]

This doctoral-level course equips students with advanced knowledge, skills, and methodologies essential for conducting rigorous research in networked learning. Delving into pivotal concepts such as network theory, social network analysis, sentiment analysis, and information diffusion, students cultivate a profound comprehension of how networks influence learning processes, knowledge dissemination, and social interactions across diverse contexts. Through a blend of theoretical discourse, practical exercises, and hands-on assignments, students attain expertise in analyzing network structures, pinpointing influential nodes, and assessing the effects of networked interventions on learning outcomes. Moreover, the course emphasizes fostering critical thinking, ethical considerations, and interdisciplinary perspectives in networked learning research, enabling students to confront intricate challenges and contribute to the field's advancement. Ultimately, students are empowered to embark on innovative research endeavors, explore emerging trends, and catalyze positive transformations within networked learning environments. Letter grade only.

HIS 206: Historical Inquiry Teaching Seminar [fuzzy match: deep learning]

Introduction to social studies teaching and learning, with visitation to secondary schools and public history venues. Includes discussions, collaborative work, practice teaching, and analysis of middle and high school student learning. Instructor consent required. Pass/Fail only.

INF 110: Discovering Informatics [fuzzy match: deep learning]

This course provides learning opportunities in the foundations of informatics, an interdisciplinary area fusing computer science, programming, and data analysis skills used to solve problems in any field, particularly the natural sciences, business, and the arts. This course will particularly focus on problems drawn from areas that provide significant benefits to human and environmental health. The course does not require any prior experience in programming and is intended for students of any background and major. This course also provides an opportunity for students to explore their interest in topics that are central to the Bachelor of Science in Informatics, Computer Science, and Applied Computer Science programs, and therefore be more informed in considering further study in one of these programs. Letter grade only.

ISM 120: Intro To Computer Information Systems [match: decision support]

Introduces computer and information systems, including the development and hands-on use of applications designed for communications, decision support, and database management. Letter grade only.

ISM 120H: Introduction To Computer Information Systems - Honors [match: decision support]

Introduces computer and information systems, including the development and hands-on use of applications designed for communications, decision support, and database management. Letter grade only.

ISM 370: Python Programming For Business Analytics [match: data mining]

This course provides a pragmatic and hands-on introduction to Python programming for business analytics. This course includes instruction and practice in decision-making, data structures, data mining and data visualization techniques. Students will design and build Python programs that increase in sophistication and complexity throughout the course. The course utilizes pandas, NumPy and other Python libraries and modules, used for business analytics, and it provides students with knowledge and skills necessary to use Python to organize and analyze business data. Completing this course will prepare students for additional courses and work in programming and advanced business analytics. Letter grade only.

MAT 526: Topics In Combinatorics [fuzzy match: generative ai]

Topics in enumerative, algebraic, and geometric combinatorics, chosen at instructor's discretion; may include advanced counting techniques, graph theory, combinatorial designs, matroids, and error-correcting codes. Letter grade only.

MAT 665: Ordinary Differential Equations [match: autonomous, autonomous systems]

Existence and uniqueness of solutions, continuous dependence, maximal interval of existence, linear systems, stability, nonlinear autonomous systems in the plane. Letter grade only.

MRE 186: Introduction To Robotics And Mechatronics Design [match: robotics]

Introduces the design process, problem-solving techniques, CAD tools, teaming skills, oral and written communication skills, and pathways for success in academic and professional careers. Multiple hands-on projects. Letter grade only.

MRE 271: Introduction To Mechatronics [match: robotics]

Introduction to foundational topics in mechatronics and robotics, including electrical circuits, microcontrollers, sensors, actuators, and basic feedback control. An integrated lab component is part of this course. Letter grade only.

MRE 394: Introduction To Thermodynamics And Heat Transfer [match: robotics]

Energy and entropy concepts, applications; first and second law principles. Theory and application of heat transfer by conduction, convection, and radiation. Applications to mechatronics and robotics. Letter grade only.

NUR 402L: Developmental And Health-illness Transitions Of Childbearing And Childrearing Families Clinical [fuzzy match: deep learning]

This clinical and experiential course presents the student with opportunities to plan or provide care for children of all ages, women who are planning on becoming, are, or have recently been pregnant, and families in community, outpatient, and inpatient settings. The skills developed in this course include (a) physiologic and developmental assessment for infants and children of all ages and levels of development; (b) health promotion, anticipatory guidance, and family teaching for prenatal, pregnant, and postpartum women; and (c) practice of the integration of theory content, critical reasoning, and the nursing process in a simulated and actual patient care activity. These learning experiences may take place in inpatient, ambulatory, school, or other community settings. The focus is on supporting positive health outcomes for the individuals as well as the family unit. The course builds upon the student's medical-surgical nursing knowledge and experience and expands their ability to provide quality nursing care across the lifespan. This clinical course prepares the student for their final semester of public health nursing and preceptor clinical experience. Letter grade only.

NUR 422: Nursing Informatics And Innovation [match: decision support]

This course provides an overview of informatics concepts and their application to nursing practice. Students will explore the use of technology in healthcare, including electronic health records, clinical decision support systems, virtual nursing, and telehealth. The course will cover data management, information security, and the ethical implications of technology in healthcare. Students will develop skills in critical thinking, problem-solving, and evidence-based practice to effectively utilize technology to improve patient care and healthcare outcomes. Letter grade only.

OTD 605: Neuroscience I: Fundamentals Of Neuroanatomy [fuzzy match: machine learning]

This course is part of the Client Factors & Performance Skills for Participation Series. This course is designed to aid the doctoral occupational therapy students in the pursuit of the fundamentals of human gross anatomy

of the nervous system. A thorough understanding of the fundamentals of neuroanatomy and neurophysiology enables interpretation, evaluation, and treatment of clients with neurological disorders & impairments. Using an integrative reasoning process, core neurological function principles are applied to practice. The primary teaching / learning methods used in this course are lecture, discussion, demonstration, peer teaching, readings, pre-class preparatory questions, and examinations. The laboratory components will primarily focus on peripheral and central nervous system structures, vascular systems, an overview of the anatomy of the brain, spinal cord, plexuses, and peripheral nerves. 3 hrs. lecture, 3 hrs. lab. Letter grade only.

OTD 624: Neuroscience Foundations For Practice [fuzzy match: machine learning]

A thorough understanding of the fundamentals of neuroanatomy and neurophysiology enables interpretation, evaluation, and treatment of clients with neurological disorders & impairments. The etiology, symptoms, diagnosis, and pharmacology of specific conditions will be explored. Using an integrative reasoning process, core neurological function principles are applied to practice. Primary teaching / learning methods used in this course are: lecture, discussion, demonstration, peer teaching, readings, pre-class. preparatory questions, and examinations (1 hr. lecture, 3 hrs. lab). Letter grade only.

OTD 633: Educational Strategies And Learning In Healthcare And Academic Settings [fuzzy match: machine learning]

One of the core principles in occupational therapy delivery, the teaching-learning process is studied and practiced. Activity analysis and learning strategies across a variety of service delivery contexts to promote performance, engagement and behavioral change is considered. Letter grade only.

OTD 646: Upper Extremity Function And Occupational Performance [match: robotics]

Interventions with orthopedic-based upper extremity conditions to optimize functional use of the hand and arm are analyzed. Emphasis on physical aged modalities, orthotics fabrication and application, hand rehabilitation methods along with an introduction to training and utilization of prosthetics and emerging robotics is included. 1 hr. lecture, 3 hrs. lab. Letter grade only.

PHA 704: Health Informatics For Practice And Management [match: data mining, decision support]

This course is designed to provide students with a foundation in health informatics, with an emphasis on systems solutions to deliver patient-centered care. Students will learn the historical framework and evolution of the discipline, and examine specific, clinically relevant concepts such as clinical decision support, evidence-based practice, precision health, consumer health tools, and data mining. Students will apply principles of informatics to PA-driven population health, patient-centered care, and clinician well-being. Letter grade only.

PSY 627: Applied Data Science And Survey Methods In The Psychological Sciences [match: data science]

The graduate course introduces the student to a set of principles in data and survey science that are relevant to psychological research. Designing, conducting, and analyzing data from multiple sources are increasingly utilized to analyze theoretically derived and applied psychological research questions leading to new insights into human behavior. This graduate course introduces data science methods, their utility and application to the psychological sciences. Students will learn key constructs and approaches from the areas of data and survey science including the methods used for curating, managing, and analyzing various forms of data. These concepts will be reinforced by review and discussion of empirical research that use these methods across psychological sub-disciplines. Course content also includes information about best practices in team data science including workflow, project management, and use open-source resources. Students will have opportunities to engage with some hands-on experiences with data curation and exploratory data visualizations in R. Letter grade only.

TSM 201: Step 2: Supervised Practicum Through Inquiry-based Lesson Design [fuzzy match: deep learning]

In TSM 201 students explore effective lesson design and the use of discourse in promoting impactful. instruction and student-centered learning. Students will study content, develop skills, and experience learning through observations and instruction in mathematics/science middle grades classrooms. A variety of practicum (teaching and observation) experiences will allow students to apply learning to the middle grades setting. Practicum may occur throughout the semester during school hours. Students will need to have time in their schedule, outside of course time, to complete practicum expectations. Letter grade only.

TSM 303W: Knowing And Learning In Science And Science Teaching [fuzzy match: deep learning]

This course examines what it means to know and learn science. The course expands prospective teachers' understanding of current theories of learning through examining their own assumptions about learning as well as the needs of a diverse student population. This understanding is then applied to knowing and learning in science. In addition, students explore A Framework for K-12 Science Education and examine the ways in which the Framework informs and impacts science teaching and learning. Additionally, the course engages students in investigating and enacting effective instructional techniques aligned with modern learning theories and the Framework in order to be responsive to the needs of students in middle and high school science classrooms. This course fulfills NAU's junior-level writing requirement. Letter grade only.

TSM 304: Design And Assessment For Science Learning [fuzzy match: deep learning]

This course for undergraduates in the NAUTeach program examines how to create more meaningful science learning experiences for all students through research-based design and assessment practices. In this course, students critically explore conceptions of science to better identify and actively address inequitable approaches to science learning in schools. Students learn how to develop tangible science learning materials that leverage the assets learners bring to the science classroom and how to anchor learning materials in contexts relevant to students' lives and communities. In addition, students apply ideas from recent science education reforms to design opportunities where students' science learning builds incrementally over time and across multiple dimensions. This course also emphasizes approaches for developing formative and summative science assessments that can be used to coherently monitor students' progress towards complex learning goals and how students orient towards science. Letter grade only.