

GRADUATE COUNCIL MINUTES
Tuesday, February 12, 2019, 9:00 a.m., McCormick 250F

Call to Order

The meeting was called to order at 9:00 by Noelle Selkow, Interim Director of Graduate Studies.

MEMBERS PRESENT

Membership/Student

Development Committee: Steve Mertens, Kyle Miller, Nweze Nnakwe, Carla Pohl
Curriculum Committee: Kim Astroth, Art Martinez, Mike Mulvaney, Rick Nagorski, Robert Quinlan,
John Rugutt
Research Committee: Rebecca Achen, Ui-Jeen Yu

MEMBERS ABSENT

Membership/Student

Development Committee: Michaelene Cox, Matt Nelson, Sarah Smelser
Curriculum Committee:
Research Committee: Dawn McBride, Christopher Mulligan
Graduate Students Arundhati Bhattacharya, Zachary Taylor

Also present: Rachel Caracci, Associate Director of Graduate Studies, Dana Davidson, and Kim Shennett from the Graduate School

Approval of Minutes

Nweze Nnakwe moved to approve the minutes of November 13, 2018. Robert Quinlan seconded, all approved.

Administrative report

- a. Interim Director of Graduate Studies introduction
 - i. Noelle Selkow, Kinesiology and Recreation, introduced herself.
- b. Associate Director of Graduate Studies updates
 - i. Slate (new admissions system) is cleaner with a few nuances.
 - ii. The Graduate School hosted recruitment workshop on February 8th. It was well attended. Plan to hold this workshop at least once a year along with training.
 - iii. Lunch vouchers for visiting prospective graduate students will be available in a few weeks. Email, [Rachel Caracci](#), with date of visit and how many needed. Rachel is hopeful this program will grow in the future.
- c. Events
 - i. Three Minute Thesis (3MT) final, February 28, 2019, at the Normal Theater. Dana noted only nine competitors this year. The winner will compete at the Midwestern Association of Graduate Schools (MAGS) meeting on March 22.
 - ii. The University Research Symposium is April 5, 2019 in the Brown Ballroom of the Bone Student Center.
 - iii. GradBird Admittance Day, April 5, 2019, at the Bone Student Center's Circus Room, Old Main Room, and Founder's Suite. Admitted graduate students have opportunity to connect with Graduate Coordinator or representative from program to ask questions, visit University Research Symposium, have a free lunch, attend grad fair, collect swag, and register for classes.

- d. Recruitment Assistance funds
 - i. Second round requests now being accepted. In the future, Noelle plans to create workshop to showcase recruitment endeavors undertaken by various graduate programs and their successes.
- e. Union update
 - i. No update. Process has not started.
- f. Council of Graduate School report
 - i. The Council of Graduate Schools report, from consulting team visit on October 17 & 18, being reviewed for corrections. After corrections complete, will return to consultants. When final report is received it will be reviewed by Provost Murphy and disseminated to Council and Graduate Coordinators.
- g. Admissions
 - i. As of Monday, February 4th, applications up for summer and fall 2019. Fall admits down 68%. Early admission stats impacted by April 15th graduate assistant offer deadline and INTO's late decision date.

Committee reports

- a. Membership/Student Development
 - i. Nominations are being solicited for open seats on Council next year. (February 18th deadline)
 - ii. Graduate Merit Fellowship Awards

Three thousand dollars is awarded the first and second year. Sixteen to be offered this year. The applications are due in the Graduate School on February 25 and March 25. Graduate Coordinators from all graduate programs complete and submit applications for their most promising, high achieving students who have been offered a Graduate Assistantship but not yet committed.
- b. Curriculum
 - i. Robert Quinlan submitted the Curriculum report and Council accepted it.
 - ii. Update to Curriculum report format moving forward. Program and course descriptions will be replaced with a link to each proposal on the Curriculum Forms site.
- c. Research
 - i. Clarence W. Sorensen Distinguished Dissertation Award winner (Award luncheon in April):
 - a. Doug Schuweiler (BSC): DOPAMINE TRANSIENTS AND AMPHETAMINE: LEARNING OR INCENTIVE SALIENCE?
 - b. Finalists: Aline Andre (TCH), Sheryl Emmerling (MCN), Molly Herman (SED) and Cristina Sanchez-Martin (ENG)

Old business

- a. None

New business

- a. .25 FTE minimum
No Graduate Assistantship contracts under 10 hours (.25 FTE) beginning fall 2019. Currently 900 students on an assistantship. Thirty-six on contracts under .25 FTE. Departments were contacted. All okay with raising to .25 FTE.
- b. Appeals Process
Currently, no official dismissal appeals process in Graduate School Regulations. Unclear if departments/colleges have one. Noelle working on process. Dismissal to start with department and come from college. Graduate School dismissal appeals go to Provost.
- c. Thesis/Dissertation committee requirement
Per Graduate School Regulations, committees must consist of a minimum of 2 full graduate faculty members from student's department. Requests for exceptions received. Is a change needed? Council discussed and concluded requirement should not change.

Adjournment

Rick Nagorski moved to adjourn, Nweze Nnakwe seconded. All approved.

GRADUATE CURRICULUM COMMITTEE REPORT

Submitted to the Graduate Council February 12, 2019. For complete curriculum proposal information please see the University's Curriculum Proposal site:
registrar.ilstu.edu/curriculumforms/

FOR INFORMATION

New Courses

AGR 462 Pest Identification Management (3 sem. hrs.)

The basic principles of weed, insect, and disease identification and integrated pest management (IPM) in agricultural and urban environments. Lecture, lab, and field trips. Not for credit if taken as AGR 389A34 or AGR 362. Prerequisites: Admission to Agriculture graduate program or consent of the instructor.

GEO 422 Sustainable Cities (3 sem. hrs.)

Theoretical and applied investigation of how cities can become more environmentally, economically, and socially sustainable and just. Not for credit if had GEO 322. Prerequisite: Graduate standing.

IT 426 Advanced Software Engineering (3 sem. hrs.)

This course builds the required skills for designing, developing, testing, configuring, and maintaining of complex software applications. Prerequisite: IT 279 or consent of the graduate advisor.

IT 427 Design and Analysis of Algorithms (3 sem. hrs.)

Study advanced techniques for algorithm design, analyze the computational complexity of the algorithms, and explore the concepts of NP-completeness. Prerequisite: IT 279 or consent of the graduate advisor.

IT 428 Fundamental Theory of Computer Science (3 sem. hrs.)

Study three major areas in theoretical computer science: Formal Languages and Automata,

Computability and Turing Machines, Intractability and Complexity structures. Prerequisite: IT 279, or consent of the graduate advisor.

IT 429 Compiler Design (3 sem. hrs.)

Study the fundamental principles of how compilers work and explore the major components of modern compilers. Not for credit if taken as IT 329 Prerequisite: IT 279, IT 327, or consent of the graduate advisor

IT 441 Big Data (3 sem. hrs.)

Covers fundamental concepts, principles, algorithms and advanced topics in large, complex data from data generation, storage, management, transfer to analytics. Prerequisites: IT279 and IT378, or consent of graduate advisor.

IT 443 Information Retrieval and Search Engines (3 sem. hrs.)

Covers the principles, design, and implementation of information retrieval systems, including algorithms and techniques in modern search engines. Prerequisites: IT279 or consent of graduate advisor.

IT 444 Data Analytics and Mining (3 sem. hrs.)

Covers knowledge discovery and data mining concepts, algorithms, models, tools and applications, focusing on analyzing real-world data. Prerequisite: IT279 or consent of graduate advisor.

IT 448 Introduction to Machine Learning (3 sem. hrs.)

Introduction to concepts in machine learning, including supervised learning, unsupervised learning, and deep learning. Prerequisite: C or better in IT 279, or consent of the graduate advisor

IT 452 Data and Information Visualization (3 sem. hrs.)

Data and information visual representation methods, interactive data visualization, visualization design and evaluation, visual perception and cognition, interactive web-based visualization. Prerequisites: IT279 or consent of graduate advisor.

IT 483 Advanced Operating Systems (3 Sem. Hrs.)

Advanced topics in operating systems, including operating system concepts and design, systems programming, networked and distributed systems, and storage systems. Prerequisites: C or better in IT 279 and IT 383 or consent of the graduate advisor.

IT 488 Topics in Computer Science (3 sem. hrs.)

Study a variety of advanced topics in computer science based on the current development and need in the field. Multiple enrollments are allowed with advisor's consent if the topics are different. Prerequisites: Consent of the graduate advisor

KNR 402 Foundations of Athletic Training (3 sem. hrs.)

Introduction to the field of athletic training, including the history, professional responsibilities, certification requirements, educational content, practical skills, and settings. Prerequisites: Concurrent registration in KNR 401.

KNR 403 Therapeutic Interventions I (3 sem. hrs.)

The advanced study of injury treatment focusing on the initial phases of the rehabilitation process. Prerequisites: KNR 401 and 402.

KNR 404 Therapeutic Interventions II (3 sem. hrs.)

The advanced study of injury treatment focusing on the later phases of the rehabilitation process. Prerequisites: KNR 403.

KNR 409 Athletic Injury Assessment I (3 sem. hrs.)

The advanced study of athletic injuries with an emphasis on the evaluation of the lower extremity. Prerequisites: KNR 402.

KNR 410 Athletic Injury Assessment II (3 sem. hrs.)

The advanced study of athletic injuries with an emphasis on the evaluation of the upper extremity. Prerequisites: KNR 409.

KNR 414 Advanced Therapeutic Interventions (3 sem. hrs.)

Detailed analysis and application of manual therapy interventions for evaluating and treating the physically active. Prerequisites: KNR 404.

KNR 424 Psychosocial Strategies in Athletic Training (2 sem. hrs.)

The study of best practices related to care for patients with behavioral and mental health concerns and/or disorders.

KNR 432 General Medical Concerns in Athletic Training (2 sem. hrs.)

The study of relevant biomedical conditions, afflictions, and associated interventions used to treat the physically active.

KNR 433 Pharmacological Applications in Athletic Training (2 sem. hrs.)

The study of best practices in theory, administration, and application of pharmacological interventions for treating the physically active.

KNR 435 Administration in Athletic Training (2 sem. hrs.)

The study of best practices in the administration and management of sports medicine services.

KNR 445 Statistics in Applied Science and Technology (3 sem. hrs.)

Descriptive and inferential statistics in the applied sciences; statistical analysis using current technology. Also offered as AGR/FCS/TEC 445. Prerequisite: KNR 497.

KNR 484 Evidence-Based Sports Medicine (3 sem. hrs.)

Introduction to clinical epidemiology and evaluation of the efficacy of prevention, diagnostic, and treatment strategies in sports medicine. Prerequisites: KNR 445 and 497.

KNR 492 Practicum in Athletic Training (3 sem. hrs.)

Supervised instruction and practice of clinical skills and competencies as part of the athletic training students' clinical experience. Prerequisites: KNR 401 and 402; Concurrent registration in KNR 403 and 409.

MQM 428 Seminar in Entrepreneurship (3 sem. hrs.)

Issues related to the formation, launch, and early-stage growth of new businesses. Topics include: ideation, opportunity recognition, lean startup methodology, business models, corporate entrepreneurship, financial projections, intellectual property protection, funding, valuation, and harvest. Multiple enrollments allowed if content is different (see the following topics); maximum of 12 hours. Prerequisite: Graduate standing.

NUR 416 The School Nurse as Educator (4 sem. hrs.)

Focuses on the role of the school nurse in the educational setting with an emphasis on needs of the exception child. Prerequisites: Bachelor of Science in Nursing or consent of Graduate Director. Successful completion of the Illinois Licensure Testing System's Test of Academic Proficiency (TAP).

NUR 417 Theoretical Foundations of School Health (3 sem. hrs.)

Course focuses on principles of population health and case management of children with chronic conditions. Prerequisites/Co-Requisites: Bachelor of Science in Nursing or consent of Graduate Director, NUR 416.

NUR 418 Practicum in School Nursing (3 sem. hrs.)

Practicum in the application of educational, learning, child development, population health and health promotion theory in the school setting. Prerequisites: Bachelor of Science in Nursing or consent of Graduate Director, NUR 416 and NUR 417

Revision to Courses

CSD 508A10 **CLINICAL PRACTICE IN AUDIOLOGY** (1 sem. hr.) (Change the title, clarify the purpose) **Introductory supervised clinical practicum, including observation. Lecture and lab.** Multiple enrollments allowed for a maximum of 2 semester hours. Materials charge optional. Prerequisite: Consent of Clinical the Director.

CSD 508A20 **BASIC CLINICAL ROTATION IN AUDIOLOGY** (2 sem. hrs.) (Change the title, clarify the purpose) **Basic** level supervised clinical practicum. Placement of external practicum sites may be included. Multiple enrollments allowed for maximum of 8 semester hours. Materials charge optional. Prerequisite: Consent of the Clinical Director.

CSD 508A30 **INTERMEDIATE CLINICAL ROTATION IN AUDIOLOGY** (3 sem. hrs.) (Change the title, clarify the purpose) Intermediate level supervised clinical practicum. Placement in a variety of clinical sites closely associated with the university clinic. Multiple enrollments allowed for maximum of 12 semester hours. Prerequisite: Consent of Clinical Director.

CSD 508A40 **ADVANCED CLINICAL ROTATION IN AUDIOLOGY** (4 sem. hrs.) (Change the title) Advanced clinical practicum in audiology conducted in various settings with individuals who have hearing loss and/or dizziness and balance disorders. Multiple enrollments allowed for maximum of 16 semester hours. Prerequisite: Consent of the Clinical Director.

CSD 598 **CLINICAL EXTERNSHIP IN AUDIOLOGY** (1 sem. hr.) (Change the title, clarify the purpose) Advanced three-semester clinical practicum in an external site. Each residency is custom-tailored to interests of the **student**. May involve relocation or travel. Multiple enrollments allowed for a maximum of 3 semester hours. Prerequisite: Consent of the instructor.

TCH 564 Assessment in Education (3 sem. hrs.) (Change the title, remove the prerequisites and revise the description) This course focuses on theory and research in educational, large-scale, and school-based assessment practices.

Editorial Revision to Courses

CHE 318 Methods of Computational Science (3 sem. hrs.) (Add IT 166 or 168 as options to IT 165 in the prerequisites for the course) Introduction to a wide variety of computational techniques and their application to problems in chemistry and physics. Also offered as PHY 318. Prerequisites: IT 165, 166, or 168; CHE 140; PHY 109 or 111; CHE 360 or PHY 220 or concurrent registration; or consent of the instructor; or graduate standing.

NUR 523 Applied Research (1 sem. hrs.) (Correct the way the hours were previously shown) A group research project is conducted under the guidance of the instructor. Multiple enrollments are allowed: 1 credit hour per semester for 3 consecutive semesters (spring, summer, and fall) to complete a total of 3 credit hours. Prerequisites: Graduate standing in Nursing or consent of the instructor.

PHY 310 READINGS FOR TEACHING HIGH SCHOOL PHYSICS (3 sem. hrs.)(Revise the prerequisites) Essential background readings for teaching high school physics that center around developing scientific literacy in students. Prerequisite: Completion of **12** hours in PHY; or graduate standing.

PHY 312 Physics Teaching from the Historical Perspective (3 sem. hrs.) (Revise the prerequisites) Overview of the development of classical scientific thought relating to physical phenomena with applications to pedagogy. Prerequisites: PHY 311 with a grade of C or better; admission to Professional Studies; or graduate standing.

PHY 318 Methods of Computational Science (3 sem. hrs.) (Add IT 166 or 168 as options to IT 165 in the prerequisites for the course)

Introduction to a wide variety of computational techniques and their application to problems in chemistry and physics. Also offered as CHE 318. Prerequisites: IT 165, 166, or 168; CHE 140; PHY 109 or 111; CHE 360 or PHY 220 or concurrent registration; or consent of the instructor; or graduate standing.

Editorial Revisions to Program

Certificate:

SED

Post-Master's Graduate Certificate for Director of Special Education Program Requirements

Requirements for endorsement as a Director of Special Education may be met through a post-master's degree program (Doctorate in Special Education) or through a non-degree program. Students seeking Director of Special Education endorsement must be admitted to the department as a post-master's graduate certificate student or as a doctoral student. Coursework will enable students to meet ISBE standards leading to the Director of Special Education endorsement.

This 24hour post-master's graduate certificate requires:

- 18 hours: EAF 434*, SED 447, 502, 513, 517, 540, 579, 593A03

- 6 hours: 598A03

- Depending on coursework completed at the Master's level, the student may need to complete SED 422 or an equivalent to meet Illinois State Board of Education professional license endorsement requirements.

*This course may be fulfilled by those who have a principal endorsement Master's degree. Substitute this with a foundational course.

Revisions to Programs

Sequence:

POL

Global Politics Sequence

Global Politics is a 32-hour sequence designed for students interested in the increasingly inter-connected politics of the modern world.

Option I—Thesis: Requirements are as follows: -

9 hours including POL 496, POL 441, POL 451-

3 hours of POL 461 or 497 -

12 hours of POL 400-level seminars chosen from POL 411, 421, 431, 433, 441, 451, 461, 463, 470, 497 (NOTE: One seminar only may be replaced with 3 hours of summer POL 400 or 490, with prior approval of the Graduate Coordinator and a letter from the instructor certifying that the content adequately substitutes for a regular seminar.) -

4-6 hours of POL 499 -

electives as needed to reach a total of 32 hours, representing a range of sub-disciplines of political science, chosen from POL 400-level or POL 300-level courses if listed in the Graduate Catalog. With

prior approval of the Graduate Coordinator, electives may include up to 3 hours of relevant graduate courses from other departments.

Option II—Comprehensive Exam: Requirements are as follows: -

9 hours including POL 496, POL 441, POL 451-

3 hours of POL 461 or 497 -

12 hours of POL 400-level seminars chosen from POL 411, 421, 431, 433, 441, 451, 461, 463, 470, 497 (NOTE: One seminar only may be replaced with 3 hours of summer POL 400 or 490, with prior approval of the Graduate Coordinator and a letter from the instructor certifying that the content adequately substitutes for a regular seminar.) -

electives as needed to reach a total of 32 hours, representing a range of sub-disciplines of political science, chosen from POL 400-level or POL 300-level courses if listed in the Graduate Catalog. With prior approval of the Graduate Coordinator, electives may include up to 3 hours of relevant graduate courses from other departments. -

Pass a comprehensive exam

Degrees:

CHE

Master of Science in Chemistry Education Program

The Master of Science in Chemistry Education (M.S.C.E.) is a professional degree designed to improve the content and pedagogical knowledge of teachers of chemistry who already possess a bachelor's degree in Chemistry. The 33 credit hour degree requires coursework in **two** areas: Chemistry Content **and** Chemistry Education, **or** Foundational Science Education. It also requires **a two semester** capstone classroom project. By the time of final degree awarding, a candidate must have completed three years of full-time teaching.

Chemistry Content:

- 12 credit hours from the following: CHE 315, **318**, 344, 350, **362**, or any 380 or 400-level course in Inorganic, Organic, Analytical, Physical, or Biochemistry for which the student has appropriate prerequisites. No credit will be granted for an Illinois State University course if a student has already taken an equivalent course elsewhere

Chemistry Education or Foundational Science Education:

- 15 credit hours from the following: 401, 402, 403; TCH 401, 450, 451, 453

Capstone Project:

- 6 credit hour sequence: **CHE 481 and 482; or** TCH 481 and 482;, or SED 406 and 407; or CHE 490 and/or 498.

CHE

Master of Chemistry Education Program Requirements

The Master of Chemistry Education (M.C.E.) is a professional degree designed to improve the content and pedagogical knowledge of teachers of chemistry who do not possess a bachelor's degree in Chemistry. The degree requires 33 credit hours of coursework in **two** areas: Chemistry Content **and** Chemistry Education, **or** Foundational Science Education. It also requires **a two semester** capstone project. By the time of final degree awarding, a candidate must have completed three years of full-time teaching.

Chemistry Content:

- 9 credit hours from the following: CHE 315, **318**, 344, 350, **362**, or any 380 or 400 level course in Inorganic, Organic, Analytical, Physical, or Biochemistry for which the student has appropriate prerequisites. No credit will be granted for an Illinois State University course if a student has already taken an equivalent course elsewhere.

Chemistry Education or Foundational Science Education:

- 18 credit hours from the following: CHE 401, 402, 403; TCH 401, 450, 451, 453

Capstone Project:

- 6 credit hour sequence: CHE 481 and 482, TCH 481 and 482, SED 406 and 407, or CHE 490 and/or 498

MBA

Master of Business Administration

Program Requirements

The M.B.A. degree assumes an undergraduate knowledge base in business and economics which students with undergraduate degrees in business will normally have acquired. Students admitted with non-business undergraduate degrees may have to complete Pre-MBA Program courses before enrolling in the M.B.A. core courses. Specific requirements will be determined by the Associate Dean for MBA and Undergraduate Programs for Academic Programs and Curriculum (hereafter referred to as "Associate Dean"). The responsibility for demonstrating prior academic coverage of the material at the appropriate level rests with the student, and should be completed at least one month prior to the beginning of the first semester of course work. Students who have not taken college algebra, economics, accounting, finance, and/or statistics within the past five years are strongly encouraged to take the Pre-MBA Program courses as a refresher prior to their first core course. Students with a non-business undergraduate degree should expect to complete some or all of the following Pre-MBA Program courses online

- Fundamentals of Economics
- Financial Accounting
- Managerial Accounting
- Principles of Management
- Principles of Marketing
- Business Math and Statistics
- Understanding Corporate Finance
- Business Law Essentials

In addition to any Pre-MBA Program courses required, some or all of which may be waived based on an individual's previous academic work, all M.B.A. candidates must complete 42 36 semester hours including: –

12 9 hour beginning skill core courses: MBA 411, 412, 416, 468 –

15 hour central core courses: MBA 421, 427, 430, 440, 450; Students who have successfully completed 12 or more undergraduate semester hours in a required core area may be eligible to substitute a 400-level elective in that area for the required core course. –

3 hour capstone course: MBA 485 –

12 9 hours of 400-level graduate business or other preapproved elective courses. (Graduate courses at the 300-level may not be taken to fulfill the M.B.A. elective requirements). In consultation with a Master of Business Administration advisor, students are able to choose from among a wide offering of elective courses to design a Plan of Study. The choice should be congruent with each student's goals. Elective concentrations are offered based on student demand, including Business Analytics, Financial Management; Human Resource Management; Risk Management, Marketing Management; Organizational Leadership, Project Management; Elective courses taken outside the College of

Business require prior approval by the Associate Dean and often involve additional course work to fulfill prerequisites.

Students without relevant full-time work experience are encouraged to consider a professional practice internship as an elective choice; up to three (3) hours of professional practice credit (498 in the ACC, FIL, MKT, and MQM departments) may be used in the Plan of Study toward the degree. A thesis may be substituted for up to six hours of elective course work. Please refer to the thesis section elsewhere in this catalog for Graduate School policies on thesis work.

Course Limitations

No more than a total of three (3) credits can be counted from any 400 (Independent Study) and 498 (Internship) courses. Exceptions must be approved by the Associate Dean. Credit will not be given for course numbers below 400 (no 300-level graduate course will be counted in an M.B.A. Plan of Study). All core and elective courses must be completed within six years from the time of taking the first core course.

Credit-Hour Limitations for Non-Business Graduate Students:

While other graduate programs on campus may require and/or give elective credit for selected MBA courses, non-MBA graduate students will not be permitted to exceed 12 credit hours of MBA course work. Non-business students seeking to enroll in MBA courses will first need to obtain their major advisor's permission to register for classes and then must submit to the MBA Office (201 State Farm Hall of Business) a completed "Non-Major Enrollment Request" form. Permission to enroll is dependent upon space availability in the requested course(s) and prior completion of prerequisites. MBA students will have priority in registration.

Courses

Descriptions of courses leading to the M.B.A. degree are found under the Departments of Finance, Insurance and Law; Management and Quantitative Methods; Marketing; Accounting; and Master of Business Administration.

New Programs

Certificates:

FCS

Dietetic Internship Graduate Certificate - (Non-degree seeking, supervised practice only)

The Dietetic Internship offers a 10-credit hour Certificate Program. Upon successful completion of the supervised practice experience, students earn the ACEND Verification Statement necessary for applying to take the national registration examination.

Certificate Requirements:

- 10 hours: FCS 402 (2 credits; repeated for a total of 4) and FCS 498 (3 credits; repeated for a total of 6).

The graduate Dietetic Internship (MS and Certificate Program) at Illinois State University is accredited by the Accreditation Council for Education in Nutrition and Dietetics of the Academy of Nutrition and Dietetics, 120 South Riverside Plaza, Suite 2190, Chicago, IL 60606-6995; (312) 899-0040, ext. 5400.

IT

Data Science: Computer Science Graduate Certificate

The Data Science: Computer Science Graduate Certificate is designed to provide a specialized education in emerging technologies for students who seek further studies in data science. The certificate is intended to prepare students to meet the growing demand for qualifications in this field. Three out of the four core courses, namely IT 441, 444, 448, and 452, are required to earn the certificate. Prerequisites: IT 279 and 378 or consent of the graduate advisor.

NUR

School Nurse Graduate Certificate

10 total hours are required to complete this graduate certificate

3.00 GPA is required to graduate with this graduate certificate

Required courses (10 hours): NUR 416, 417, 418

Sequence:

ECO

Quantitative Economics Sequence

The sequence in quantitative economics is designed for students who intend to pursue doctoral level studies in economics or related fields.

- Total number of credit hours required: 34 hours (or more)

- 19 hours core: ECO 437, 438, 439, 440, 441, 495

- 3 hours: ECO 492

- 12 or more hours from the list of math courses: MAT 337, 347, 350, 447, 455, 456, 461