PURDUE UNIVERSITY
GRADUATE SCHOOL

Minutes of the Graduate Council Meeting
May 8, 2017
1:30 p.m.

Ninth Meeting
West Faculty Lounge
PMU

PRESENT: Mark J. T. Smith, chair; Council Members, Thomas W. Atkinson, David S. Cochran, Marius D. Dadarlat, (Vincent) Jo Davisson, Melissa M. Franks, Takashi Hibiki Michael A. Jenkins, Mary E. Johnson, Marcela Martinez, Linda J. Mason, James L. Mohler, Jerry P. Ross, Paul Salama, Jen Tang, Candiss B. Vibbert (Provost's Representative, Howard N. Zelaznik

APOLOGIES FOR ABSENCE RECEIVED FROM:
Bedrich Benes Richard E. Blanton, Natalie J. Carroll, Joy L. Colwell, Michael J. Connolly, Lucy M. Flesch, Jonathan M. Harbor, James L. Mullins, Kathryn M. Obenchain, David G. Skalnik, Carol S. Sternberger, Vikas Tomar, Jun Xie, Yan Ping Xin, Mohammad Zahraee

ABSENCES:
Carlos M. Corvalan, David B. Klenosky, Susan M. Mendrysa, Melanie Morgan, Steven Son, Henry E. Williams, Chong Xiang

GUESTS: Debbie Fellure, Brittany Wright

I. MINUTES

The minutes of the April 20, 2017, Graduate Council meeting were approved as presented.

II. DEANS REMARKS AND REPORTS

a) Dr. Mark Smith mentioned the recent acquisition of Kaplan University. At this point, there is no information to share, but more will be learned in the days ahead.

b) Dr. Mark Smith noted the Council of Graduate Schools (CGS) met in Washington, D.C. in late April. Deans were able to meet with congressional representatives. Dr. Smith noted that this is an opportunity to have conversations with staffers, congressmen, and senators to help them understand the benefits that graduate education provides. CGS hopes that these continued efforts will have an impact on the decisions being made in Washington, D. C. that impact all of us.

c) Dr. Smith noted the Council of Graduate Schools will hold its Global Summit meeting in September. The Summit brings faculty members from all over the world to discuss important issues. The topic of discussion for the Summit will be: Graduate Education 2030, Imagining the Future. The subtopics discussed will be Global and Regional Demographic Shifts, Friends in Technology, Generational Respect, and Credentialing.

d) Dr. James Mohler gave a report on pending degree program proposals in various stages of review and approval.

e) Dr. James Mohler gave a report on pending course proposals in review with the Graduate Council area committees, proposals awaiting additional information from proposers, course proposals requested by departments for removal, and new course proposals received since the previous Graduate Council meeting.

III. AREA COMMITTEE REPORTS (Area Committee Chairs)

Graduate Council Document 17-E, Graduate Council Documents Recommended for Approval:

Area Committee E, Life Sciences (Natalie J. Carroll, chair; ncarroll@purdue.edu):
Graduate Council Document 17-16a, NUR 67700 Cognate Residency: Knowledge Translation (PNW-Calumet)

Dr. Michael Jenkins presented one course for consideration. The course was approved by the council, upon a motion by Dr. Jenkins.

IV. PURDUE GRADUATE STUDENT GOVERNMENT -- PRESIDENT'S REPORT

Ms. Marcela Martinez, President of the Purdue Graduate Student Government (PGSG) mentioned the first PGSG meeting will be on Wednesday, May 10, 2017.

V. OLD BUSINESS

a) Dr. Mark Smith presented GC doc 17-18a, *Guidelines for Graduate Student Mentoring and Advising*. The document was approved by the Council, upon a motion by Dr. Smith.

VI. NEW BUSINESS

a) Dr. Mark Smith presented a statement of endorsement in recognition of the IPFW separation into PFW and IUF. The statement reads, "The Graduate Council endorses the administrative transfer of IPFW IU degree programs (and constituent courses) to PFW PU degree programs in accordance with the realignment agreement signed by the Trustees of IU and Purdue. Furthermore, the Graduate Council welcomes the former IPFW IU faculty into the Purdue family as new members of PFW". The endorsement was approved by the Council, upon a motion by Dr. Smith.

b) Dr. Mary Johnson presented the document for the Task Force on S/U grades. Members of the committee are: Mary Johnson, Shawn Donkin, Joan Fulton, and Linda Mason. Dr. Johnson noted the Task Force looked at the satisfactory/unsatisfactory grading on 69800 and 69900 courses. There are three grades: S, U, and SI. What happens sometimes is that a student claims that they are surprised when they receive an unsatisfactory grade for their research. Perhaps a faculty member has not communicated their expectations; therefore, the student is surprised when they have not met them.

Dr. Johnson noted that they took the policy that has been in place for quite some time. The current policy notes that graduate students are expected to earn S grades for research registration. If there are two consecutive sessions of U grades for research registration, that mandates that the department take formal action, informing the student and the Graduate School in writing, with regard to discontinuation or conditions for continuation of the student's graduate study. Should the student fail to perform and need coursework or research on a level acceptable to the advisory committee, the departmental graduate committee, or the Dean of the Graduate School, he/she may be asked to discontinue graduate study at Purdue.

Dr. Johnson noted that the Task Force committee looked at what were the issues involved in this and it is basically a failure to communicate. Typically, these courses do not have any type of formal agreement on the expectations of that course; therefore, that can set up a situation where people have miscommunication. Dr. Johnson noted that what the committee created was a way to better communicate between the graduate student and their advisor or their research advisor. Some departments already have a form such as Ag Econ. We are asking that in the first two weeks of the semester you communicate with your graduate student to make sure they understand what is expected and this is how the student will know they have met the expectation. Both the student and advisor will sign the form to acknowledge that each party has received it. Dr. Johnson noted at the end of the semester the student and advisor will meet to complete the last page of the form asking how the process went and again both will sign, acknowledging the form was received.

Dr. Johnson asked that the Graduate Council look at this information and provide feedback to the Task Force committee. This will be discussed and revised in the Fall.

c) Dr. Mark Smith discussed the need for a process to handle authorship dispute and invited input from the Council regarding what kind of process should be considered.

Dr. Smith contacted the Big10 Academic Alliance deans and found that most of them do not have a process in place either. A few of the deans said that disputes were adjudicated by either the Graduate School or the Research Integrity Officer. Dr. Smith noted that the most comprehensive response was from Iowa where the first attempt would be to resolve the matter informally at the department level and then at the college level for mediation. If that fails, the case can go through a formal grievance process with the integrity officer or the Vice President for Research.

Dr. Smith mentioned that this matter will be a topic of conversation at the next Graduate Education Advancement Committee (GEA) meeting.

VII. CLOSING REMARKS AND ADJOURNMENT

The council meeting was adjourned by Dr. Smith at 2:35 p.m.

Mark J. T. Smith, Chair
Tina L. Payne, Secretary

APPENDIX A

PENDING DOCUMENTS

(May 8, 2017)

BOLDED ITEMS ARE IN REVIEW WITH AN AREA COMMITTEE

Area Committee A, Behavioral Sciences (Yan Ping Xin, chair; yxin@purdue.edu):
***Graduate Council Document 17-15a,* CDFS 64500, Couple and Sex Therapy (PNW-Calumet)**
***Graduate Council Document 17-15b,* CDFS 64600, Contemporary Issues in Family Therapy (PNW-Calumet)**
***Graduate Council Document 17-15c,* CDFS 64700, Diversity and Social Justice in Family Therapy (PNW-Calumet)**
***Graduate Council Document 17-15d,* CDFS 64800, Applied Multivariate Analysis (PNW-Calumet)**
***Graduate Council Document 17-15e,* CDFS 68100, Psychopathology and Behavior Disorders for Family Service Professionals (PNW-Calumet)**

Area Committee C, Engineering, Chemistry, and Physical Sciences (Lucy Flesch, chair: lmflesch@purdue.edu
***Graduate Council Document 17-6b,* CE 52910, Matrix Analysis of Structures (PNW-Calumet)**

Area Committee E, Life Sciences (Natalie J. Carroll, chair; ncarroll@purdue.edu):
***Graduate Council Document 17-16b,* NUR 64100 Principles of Epidemiology (PWL)**
***Graduate Council Document 17-16a,* NUR 67700 Cognate Residency: Knowledge Translation (PNW-Calumet)**

Area Committee F, Management Sciences (Jun Xie, chair; junxie@purdue.edu):
***Graduate Council Document 17-11a,* ECON 63300, Macroeconomics with Heterogeneous Agents (PWL)**
***Graduate Council Document 17-11b,* ECON 64100, Computational Economics/Numerical Methods (PWL)**
***Graduate Council Document 17-11c,* ECON 65300, Economics of Early Childhood and Skill Formation (PWL)**
***Graduate Council Document 17-11d,* ECON 68100, Bayesian Econometrics I (PWL)**
***Graduate Council Document 17-11e,* ECON 68200, Bayesian Econometrics II (PWL)**

***Graduate Council Document 16-16a,* HTM 50300, Business Statistics and Quantitative Analysis in Hospitality (PWL)**
***Graduate Council Document 16-16b,* HTM 51100, Hospitality Business Law and Risk Management (PWL)**
***Graduate Council Document 16-16d,* HTM 53600, Advanced Service Management for Hospitality and Tourism (PWL)**
***Graduate Council Document 16-16e,* HTM 54200, Strategic Revenue Management in the Hospitality Industry (PWL)**
***Graduate Council Document 16-16f,* HTM 59500, Applied Management Project (PWL)**
***Graduate Council Document 17-13b,* MGMT 53600, Employment Law for Managers (PWL)**
***Graduate Council Document 17-13b,* MGMT 53600, Employment Law for Managers (PWL)**

NEW DOCUMENTS RECEIVED

(After the May 8, 2017 Graduate Council Meeting)

Area Committee A, Behavioral Sciences (Yan Ping Xin, chair; yxin@purdue.edu):

Graduate Council Document 17-31a, **ITS 55100, Principles of Information Assurance** (PNW-Hammond) Sem. 1 and 2. SS. Credit 3. Prerequisites: Master student standing, leveling courses may be required based upon student's undergraduate degree. Consent of department.

This course covers information security governance and risk management, access control, security architecture and design, physical security, telecommunication and network security, wireless security, cryptographic, Virtualization and cloud security, supply chain security, critical infrastructure security, business continuity, legal issues, application security and software development assurance, security operations, security policy, security management, ethical hacking and penetration testing. Professor Tu.

Graduate Council Document 17-30a, **MSV 59800, MSV Directed Project** (PNW-Hammond) Sem. 1 and 2. SS. Research. Credit 1 to 3. Prerequisites: Master's student standing or consent of faculty advisor/instructor.

A formal investigation of a particular problem under the guidance of the advisory committee. Enrollment during at least two consecutive terms for a total of 3 credits is required. Instructors will vary.

Graduate Council Document 17-17a, Proposal for a Graduate Certificate in Managing Information Technology Projects, Department of Computer and Information Technology, Purdue Polytechnic Institute (PWL)

Area Committee C, Engineering, Chemistry, and Physical Sciences (Lucy Flesch, chair: lmflesch@purdue.edu):

Graduate Council Document 17-24a. **ART 51500, Introduction to Facilities Engineering Systems** (IUPUI) Sem. 1 and 2. SS. Lecture 1 time per week for 150 minutes. Distance. Credit 3.

This course introduces and examines the design criteria, operation, safety, maintenance, testing and assessment of building engineering systems. The inter-relationships of fire protection, HVAC/R, electrical distribution, plumbing, lighting, acoustics, telecommunication and energy management are examined. Professor Ray.

Graduate Council Document 17-29a, **CS 51510, Algorithms** (PNW-Hammond) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: Undergraduate coursework in Data Structures and Algorithms. Approval of department.

This course concentrates on the design of algorithms and the rigorous analysis of their efficiency. We will cover various algorithm design techniques such as divide and conquer, dynamic programming, greedy algorithms, and approximation algorithms; for each algorithm, we will perform complexity (worst case, average case) analysis. Professors Kraft, Yang, Zhang and Zhao.

Graduate Council Document 17-29b, **CS 51520, Operating Systems** (PNW-Hammond) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: CS 30200. Approval of department.

Graduate Council Document 17-29c, **CS 51530, Programming Languages, Interpreters & Compilers** (PNW-Hammond) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3. Approval of department.

This course provides the student with an overview of the issues that arise in the design and construction of translators for programming languages. The course emphasizes techniques that have direct application to the construction of compilers. Students are expected to develop a fundamental understanding of the issues that arise in program translation, including syntax analysis, translation, and rudimentary program optimization. Professors Kraft, Yang, Zhang and Zhao.

Graduate Council Document 17-29d, **CS 51540, Object-Oriented Design, Analysis and Programming** (PNW-Hammond) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3.

This course is for students who already have programming experience. The course exposes students to the depth and breadth of modern programming practice, with the goal of making students better programmers. It provides a rigorous introduction to the advanced concepts behind object oriented programming such as encapsulation, information hiding, inheritance, dynamic binding and polymorphism. We discuss object-oriented design, design patterns and see how they can be implemented in different object-oriented programming languages. Java and C++ are used as the vehicle for illustrating and implementing these concepts. Professors Kraft, Yang, Zhang and Zhao.

Graduate Council Document 17-29e, **CS 51550, Database Systems** (PNW-Hammond) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3. Approval of department.

Graduate Council Document 17-29f, **CS 51560, Software Engineering** (PNW-Hammond) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: CS 41600. Approval of department.

Software engineering is the discipline concerned with the application of theory, knowledge, and practice for effectively and efficiently building software systems that satisfy the requirements of users and customers. This course provides an introduction to all phases of the life cycle of a software system, including requirement analysis and specification, UML modeling and design, implementation, testing, and operation and maintenance. The principles of project management, cost and effort estimation, scheduling, documentation, and quality assurance are also covered. A group project will be assigned. Each student will play one of the following roles: Project Manager (PM), Requirement Engineer (RE), Software Architect (SA), Integration Engineer (IE), Testing Engineer (TE), and User/Product Director (UPD). Every student will play the role of a Code Developer (CD) as well. Every student should also participate in the activities of the professional associations. The commercial and research prototype tools of IBM Rational Suite will be used. Some latest research papers about Software Engineering will be discussed. Professors Kraft, Yang, Zhang and Zhao.

Graduate Council Document 17-29g, **CS 51570, Computer Architecture** (PNW-Hammond) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: CS 22300. Approval of department.

This course is the science and art of selecting and interconnecting hardware components to create computers that meet functional, performance and cost goals. It includes the following topics: Fundamentals of computer design, Instruction set principles and examples, Pipelining, Instruction-Level Parallelism and its dynamic exploitation, exploiting Instruction-Level Parallelism with software approaches, Memory hierarchy design, Parallel Processors and Cloud Computing. RISC, Intel 80x86, VAX, and IBM 360/370 are examples of the computer architecture for discussion. Reading and presenting the latest published papers related branch prediction and instruction-level parallelism are required. A project about designing branch prediction algorithms and evaluating the algorithms using SPEC benchmarks is also required. Professors Kraft, Yang, Zhang and Zhao.

Graduate Council Document 17-29h, **CS 51580, Computer Graphics** (PNW-Hammond) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: Graduate student standing in Computer Science program. Approval of department.

An introduction to advanced computer graphics and the rendering of 3D computer graphics images. Topics include the concepts, principles, algorithms, and programming techniques in 3D interactive computer graphics. Emphasis is on the development and applications of 3D graphic algorithms and methods. Professors Kraft, Yang, Zhang and Zhao.

Graduate Council Document 17-29i, **CS 51590, Parallel Computing** (PNW-Hammond) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: Graduate student standing in Computer Science program. Approval of department.

Parallel computing for science and engineering applications: parallel programming and performance evaluation, parallel libraries and problem-solving environments, models of parallel computing and run-time support systems, and selected applications. Professors Kraft, Yang, Zhang and Zhao.

Graduate Council Document 17-29j, **CS 52510, Distributed Systems** (PNW-Hammond) Sem. 1 and 2. SS. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: Approval of department.

Graduate Council Document 17-28a, **CSCI 50900, Software Quality Assurance** (IUPUI) Sem. 2. Lecture 2 times per week for 75 minutes for 14 weeks. Presentation 2 times per week for 75 minutes for 2 weeks. Credit 3. Prerequisites:

This course is designed to teach students best practices in testing different classes of software systems. To accomplish this task, we start with an overview of *software testing* and its role in developing high-quality software. We then begin studying, in depth, traditional software testing methods, such as functional, structural, and integration testing. Finally, we finish the course by surveying contemporary software testing methods, such as exploratory testing, model-based testing, search-based testing, and non-functional testing. Students will have opportunity to apply learned techniques on several programming projects throughout the semester. Professor Hill.

Graduate Council Document 17-28b, **CSCI 55800, Multimedia** (IUPUI) Sem. 2. Lecture 2 times per week for 75 minutes for 11 weeks. Presentation 2 times per week for 75 minutes for 3 weeks. Laboratory 2 times per week for 75 minutes for 1 week. Credit 3.

This is a course with emphasis on visual media such as image and video processing, transmission, understanding and retrieval. We discuss various types of media, methods for media creation, editing, and algorithms for media indexing, transmission, and recognition, Students will not only learn fundamental principles of signal, frequency, filtering and transformation, but also gain

hands-on experiences in creating multimedia contents for Internet access, implementing multimedia display for visualization, and developing basic algorithms for information extraction and retrieval for

multimedia. This course will have lab training and topic discussion sessions where students will be actively involved in presenting research papers. Several exercises and projects will be assigned in addition to the presentation. Professor Zheng.

Graduate Council Document 17-28c, **CSCI 55900, Biometric Computing** (IUPUI) Sem. 2. Lecture 2 times per week for 75 minutes. Credit 3.

This course will discuss theory, applications, and implementation of biometrics. The majority of biometrics systems follow a specific architecture, namely a low-to-high level processing pipeline. For students to understand every component of this pipeline for different trait-specific systems, the course will include image processing, computer vision, and machine learning principles and methods. The course will also include examples of real-world systems, and will discuss how different technical components are applied in practice for different scenarios/physical conditions. Professor Tsechpenakis.

Graduate Council Document 17-28d, **CSCI 57800, Statistical Machine Learning** (IUPUI) Sem. 2. Lecture 2 times per week for 75 minutes. Credit 3. Prerequisites: Calculus, linear algebra, and random variables, basic knowledge of optimization techniques.

This course will provide an introductory to mid-level coverage of concepts and techniques in machine learning with emphasis given on statistical aspects of machine learning. Topics to be discussed include: Generative and discriminative models for classification and regression, posterior distributions and inference, conjugate distributions, model generalizability, kernel machines, dimensionality reduction, introduction to probabilistic topic models, graphical models and belief propagation, expectation-maximization, deterministic and stochastic inference. Professor Dundar.

Graduate Council Document 17-28e, **CSCI 57900, Bioinformatics Algorithms** (IUPUI) Sem. 1. Lecture 2 times per week for 75 minutes for 14 weeks. Presentation 1 time per week for 75 minutes for 1 week. Credit 3.

This course teaches algorithms for solving important computation problems in the field of bioinformatics. String data structures such as hash table suffix tree, and suffix arrays, and popular algorithm design techniques, such as dynamic programming, greedy algorithms, divide & conquer, and graph based algorithms are covered. Data analysis methods such as clustering, and hidden Markov model (HMM) are also covered. Application of these algorithmic methods for solving several bioinformatics computation problems, such as sequence alignment, motif discovery, and DNA sequencing are demonstrated. Professor Al Hasan.

Graduate Council Document 17-28f, **CSCI 62600, Advanced Information Assurance** (IUPUI) Sem. 1. Lecture 2 times per week for 75 minutes for 4 weeks. Presentation 2 times per week for 75 minutes for 12 weeks. Credit 3.

Advanced and emerging topics in information assurance, including selections from the following: penetration testing, formal verification of systems, formal models of information flow and protection, distributed system authentication, protocol design and attack, computer viruses and malware, intrusion and anomaly detection models, multi-level security, active defenses, investigation and forensics, network firewalls, anonymity and identity, e-commerce support, database security models and mechanisms, secure group communication, wireless/sensor network security, cryptographic access control, secure multiple party computation, zero-knowledge proof, oblivious transfer, emerging security techniques such as digital provenance and moving target defense. Professor Zou.

Graduate Council Document 17-25a. **ECET 53800, Energy Management for Building** (IUPUI) Sem. 1 and 2. SS. Lecture 1 time per week for 150 minutes. Distance. Credit 3.

This course introduces practical procedures to select options in order to operate and maintain commercial buildings to reduce building system energy costs and to help meet environmental standards. Professor Goodman.

Graduate Council Document 17-25b. **ECET 54500, Management of IT, Telecommunication, and Video Infrastructure** (IUPUI) Sem. 1 and 2. SS. Lecture 1 time per week for 150 minutes. Distance. Credit 3. Prerequisites: ART 51500.

This course is an overall look at managing the telecommunications infrastructure within facilities. The primary topics include: identifying various types of telecom equipment; designing effective wiring plans and equipment rooms; managing data and video facilities; and contacting and outsourcing effectively. Additionally, other topics will be discussed including; regulatory impacts to telecom; strategic planning considerations; disaster prevention and planning; understanding the convergence of voice and data; and integrating the telecom function into the organization. Professor Oschman.

Graduate Council Document 17-26a. **IET 51500, Introduction to Facilities Planning and Management** (IUPUI) Sem. 1 and 2. SS. Lecture 1 time per week for 150 minutes. Distance. Credit 3.

The overall planning process for facilities is presented including: space planning; facilities layout; engineering systems integration; site selection; OSHA and EPA compliance; and compliance with ADA requirements. Additionally, topics related to management or organization of the facility function will be discussed including: management functions; how facility management fits into the organization structure; professional conduct and certification of facility professionals; and risk management. These areas of planning are presented in an integrated manner along with different modeling and simulation approaches. Professor Ray.

Graduate Council Document 17-26b. **IET 53000, Facilities Contract Management** (IUPUI) Sem. 1 and 2. SS. Lecture 1 time per week for 150 minutes. Distance. Credit 3. Prerequisites: IET 51500.

This course will teach you the basics of contracts for use in management of facilities. The purpose of the course is not to teach you how to write contracts. Instead, you will learn key principles of contract law so that you can better understand how an agreement is made and what terms become part of that agreement. Knowledge from this course will help the facility manager navigate the contractual process, from negotiating terms to dealing with potential disputes. Areas of focus will include real estate contracts, negotiations, managing risks and disputes, and the uniform commercial code. An emphasis will also be placed on contracts related to construction projects. Professor Ray.

Graduate Council Document 17-26c. **IET 53500, Facilities Maintenance and Operation** (IUPUI) Sem. 1 and 2. SS. Lecture 1 time per week for 150 minutes. Distance. Credit 3. Prerequisites: ART 51500.

Topics of this course include: infrastructure management; maintenance influence on life-cycle cost; preventive and predictive maintenance programs; maintenance management software tools; and interaction with trade craftsmen. Professor Piskorowski.

Graduate Council Document 17-26d. **IET 55000, Financial Aspects of Facilities Management** (IUPUI) Sem. 1 and 2. SS. Lecture 1 time per week for 150 minutes. Distance. Credit 3. Prerequisites: ART 51500.

Financial analysis and reporting, concepts and methods of accounting, budgeting and evaluation of projects are examined. The role of facility managers in affecting corporate earnings and valuations is presented. The management of the facility over is entire life-cycle included. Professor Ray.

Graduate Council Document 17-26e. **IET 57500, Supply Chain Logistics Operations in Facilities and Industry** (IUPUI) Sem. 1 and 2. SS. Lecture 1 time per week for 150 minutes. Distance. Credit 3.

This course is a blend of engineering and technical concepts with commercial applications to form a practical primer on the manufacturing, distribution and transportation workplace. The student will gain an understanding and appreciation for the engineering, design, operation and maintenance of facilities and supporting systems (the supply chain) by understanding the activities and initiatives (logistics) that are facilitated through their use. Topics include; logistics and supply chain concepts, global logistics, customer service, inventory justification and management, procurement and supply, transportation systems, warehousing, material handling, distribution network design, facility layout and location, logistics information technology, and logistics systems organization. Emphasis will be placed on emerging industries such as fulfillment, distribution and medical/life sciences. Professor Ray.

Area Committee E, Life Sciences (Natalie J. Carroll, chair; ncarroll@purdue.edu):

Graduate Council Document 17-16c. **NUR 69100, Health Care Research Methods** (PWL) Sem. 1 and 2. SS. Lecture 1 time per week for 150 minutes. Credit 3.

This course advances knowledge and skill in quantitative research methods for health program evaluation, population health, healthcare quality improvement, and other healthcare research applications. Topics include design of experimental, quasi-experimental, and observational studies; primary data collection through surveys and other techniques; use of clinical, administrative, and other secondary data sources; and data analysis strategies appropriate to each design and type of data. The course addresses basic issues of sampling, measurement, and validity and reliability, as well as practical issues that arise in healthcare research. Professor Arling.

Area Committee F, Management Sciences (Jun Xie, chair; junxie@purdue.edu):

Graduate Council Document 17-27a, Proposal for a Major in Finance, Krannert School of Management (PWL)