GRADUATE COUNCIL
NOVEMBER 16, 2017
AGENDA

POLICIES

1. XXX-769: Residence Credit for the Doctor's Degree
2. Enrollment policy for master's students
3. Grading scale for research credit courses
4. Leave of absence policy
5. Modified time-to-degree policy
6. Senate charge to Graduate Council (differentiation of master's and doctoral level rigor)

PROGRAMS

1. Graduate Certificate Renewals

   Gender and Women's Studies
   Computational Fluid Dynamics
   Assistive and Rehabilitation Technology
   Clinical and Translational Science
   Anatomical Sciences Instruction
   Cognitive Science
   Public Health Management
   College Teaching and Learning

2. Change to Graduate Certificate in Power and Energy
3. Change to Doctoral Degree in Business Administration

COURSES

1. LAW-942: Request to use for graduate credit
2. New: LIS-662: Data Analysis and Visualization (Dr. Ma)
3. Change: CPH-600: Health Services and Systems Organization (Dr. Thibault)
4. Change: KHP-695: Independent Study in Kinesiology and Health Promotion (Dr. Tai)
5. Change: KHP-782: Independent Research in Kinesiology and Health Promotion (Dr. Tai)

Graduate Certificate Renewal

Gender & Women's Studies

Submission Date	2017-10-30 20:22:22
Director of Graduate Certificate	Karen Tice
Email	karen.tice@uky.edu
Have the objectives of the certificate been met over the last 5 years?	The GWS graduate certificate program has continued to meet its original objectives by enrolling graduate students from a variety of disciplines, including professional schools (e.g., engineering, education, nursing, public health, library sciences, social work) and those within Arts & Sciences (particularly English, History, Hispanic Studies, Geography, and Anthropology) as well as post-baccalaureate students.
Have the educational needs which triggered the development of the graduate certificate been satisfied?	The GWS graduate certificate was established in 1994 to offer graduate students in other disciplines the opportunity to extend their academic credentials to include interdisciplinary training in gender and women's studies in response to the increasing emphasis on interdisciplinary research within the academy. It also was designed to ensure that GWS graduate courses include rich, cross-disciplinary dialogues and perspectives. The certificate program was also conceived as an opportunity for post-baccalaureate work for individuals not in another graduate program. This extends the opportunities for higher education to non-traditional students and individuals who may not be able to attend graduate school full-time. Finally, the GWS certificate was established to enhance opportunities for students in the job market. Since 1994, GWS has awarded 155 certificates to date including to post-baccalaureate students some of which have enrolled as full-time doctoral students in a variety of disciplines. While the GWS certificate has been successful in satisfying these educational needs to date, interest in interdisciplinary certificates such as GWS are on the increase.
How many students have been admitted to the certificate program over the last five years?	Approximately 55 students have enrolled in the GWS certificate during this time frame. However, since many graduate students do not apply for admission to the certificate prior to taking classes towards the certificate, we do not know the full extent of enrollment with intent to obtain the GWS certificate.
What is the average amount of time that these students have taken to complete the program?	Most students complete the certificate within a year in conjunction with their coursework in other fields.
How many students have graduated from the program over the last 5 years?	Thirty students have received GWS graduate certificates during this time frame.
What value have the students derived from receiving the graduate certificate?	Two of the students who received the GWS certificate went on to apply for the GWS doctoral programs including one post-baccalaureate student. As a result of the GWS certificate, a majority of the students have reported that they their certificate coursework has played a major role in shaping their theses and their teaching. For example, one EPE student who received a GWS certificate recently published her book on gender and sexuality on evangelical college campuses with Rutgers University Press. Additionally, students have reported that their coursework has allowed them to apply for interdisciplinary academic positions as well as policy and nonprofit jobs because of the GWS certificate.

What is your assessment of the need for this graduate certificate over the next 5 years?	We, as a department, anticipate that, given the trend towards interdisciplinary studies and a increasingly competitive job market, the need for and relevance of the GWS graduate certificate will continue in the future. Organizations such as the National Women's Studies Association as well as the Chronicle of Higher Education have reported a steady national increase in student demand for interdisciplinary graduate studies as a means of broadening career opportunities, creating interdisciplinary collaborations, and enlarging student knowledge of theoretical frames and methodologies.

Graduate Certificate Renewal

Computational Fluid Dynamics

Submission Date	2017-11-05 10:27:52
Director of Graduate Certificate	Alexandre Martin
Email	alexandre.martin@uky.edu
Have the objectives of the certificate been met over the last 5 years?	YEs
Have the educational needs which triggered the development of the graduate certificate been satisfied?	Yes
How many students have been admitted to the certificate program over the last five years?	unknow
What is the average amount of time that these students have taken to complete the program?	5 year
How many students have graduated from the program over the last 5 years?	unknow
What value have the students derived from receiving the graduate certificate?	Expert in the field of CFD
What is your assessment of the need for this graduate certificate over the next 5 years?	MOre students.

Graduate Certificate Renewal

Assistive and Rehab Technology

Submission Date	2017-11-06 15:38:14
Director of Graduate Certificate	Margaret Bausch
Email	meb@uky.edu
Have the objectives of the certificate been met over the last 5 years?	yes
Have the educational needs which triggered the development of the graduate certificate been satisfied?	yes
How many students have been admitted to the certificate program over the last five years?	5
What is the average amount of time that these students have taken to complete the program?	1.5 years
How many students have graduated from the program over the last 5 years?	3
What value have the students derived from receiving the graduate certificate?	Extensive knowledge of assistive technology (AT), a service mandated by the federal law, IDEA. The students who have graduated from the program have become leaders in AT in their schools, school districts, or Institute of Higher Educaton.
What is your assessment of the need for this graduate certificate over the next 5 years?	The need will increase as the department has received federal funding to prepare Masters students in special education. The ART certificate will be one component of the degree for some of the students.

Graduate Certificate Renewal

Clinical and Translational Science

Submission Date	2017-10-24 09:20:43
Director of Graduate Certificate	Hannah Knudsen
Email	hkknud2@uky.edu
Have the objectives of the certificate been met over the last 5 years?	The goal of the Certificate in Clinical and Translational Science (CTS) program, which is housed in UK's Department of Behavioral Science, is to improve the health of the citizens of the Commonwealth of Kentucky and the nation by training professionals to conduct clinical and translational science research. CTS is an academic discipline that focuses on acceleration of the translation of basic science advances to tangible improvements in public health. The program includes education in the core competencies of CTS; advanced interdisciplinary education; and research training tailored to the research interests and career objectives of the scholar. Notably, the Certificate in CTS is integrally linked to the Center on Clinical and Translational Science (CCTS) at UK, which is one of about 60 recipients of the Clinical and Translational Science Awards from the National Institutes of Health. Our Certificate program has been meeting these goals as evidenced by the number of individuals who have completed the program in the past 5 years. The success of the Certificate program is also evidenced by the renewal of funding for the CCTS in 2016 by NIH. The Certificate's Assessment Plan was approved for implementation for the 2016-2017 academic year. Reports were prepared based on the review of artifacts, grades, and course evaluations for two Student Learning Outcomes, yielding a total of six assessment reports for the Certificate program. These six reports indicated that the Certificate exceeded expectations for three metrics, and met expectations for two additional metrics; the only metric not met was based on a review of grades for biostatistical training. Taken together, we are meeting the objectives of the Certificate.
Have the educational needs which triggered the development of the graduate certificate been satisfied?	While the Certificate has been satisfying the needs of students who have enrolled in the program, the overarching need to train more health professionals in Clinical and Translational Science (CTS) continues. By training more individuals in CTS, the quality of care within UKHealthcare can continue to increase and more researchers will be able to acquire independent funding for research. From this perspective, the educational needs are ongoing in the sense that there are always more individuals who would benefit from the research training that is available in this Certificate program.
How many students have been admitted to the certificate program over the last five years?	72
What is the average amount of time that these students have taken to complete the program?	1.5 years
How many students have graduated from the program over the last 5 years?	48

What value have the students derived from receiving the graduate certificate?	The graduate Certificate in Clinical and Translational Science (CTS) provides robust research training in four areas: (1) research design, (2) grantwriting and interdisciplinary team science, (3) ethical conduct of research, and (4) biostatistical analysis of CTS data. Our primary student population consists of health professionals, including junior faculty in the health colleges as well as Residents and Fellows within UKHealthcare. Most of our students have had limited formal training in the four areas described above. Through completion of the coursework in the Certificate, students learn skills that are then applied in final projects and exams that demonstrate their abilities in these four areas. Notably, by the end of the Certificate, students will have written an NIH-style grant application, prepared an Institutional Review Board protocol for the conduct of a study, and have conducted data analyses in the biostatistics course using a range of statistical techniques. Taken together, the value of these skills is that students are better positioned to design CTS research and can engage in critical appraisal of the scientific literature based on these skills.
What is your assessment of the need for this graduate certificate over the next 5 years?	This graduate Certificate in Clinical and Translational Science will continue to be needed over the next 5 years. One major reason for this need is that a substantial number of Certificate students are Residents and Fellows within UKHealthcare. New Residents and Fellows come to UKHealthcare every year, so there is an ongoing pipeline of interested students who are seeking to increase their skills in designing CTS research, applying for CTS grants, ethically conducting research with human subjects, and analyzing CTS data for scientific publications. Thus, there is an ongoing need to continue this Certificate program, which is vitally important to the training component of UK's CCTS.

Graduate Certificate Renewal

Anatomical Sciences Instruction

Submission Date	2017-10-20 12:14:27
Director of Graduate Certificate	April Richardson Hatcher
Email	arich3@uky.edu
Have the objectives of the certificate been met over the last 5 years?	The objectives of the Graduate Certificate in Anatomical Sciences include the following: 1. Prepare recipients for a successful career in teaching the anatomical sciences (with an emphasis in gross anatomy and neuroscience) 2. Provide recipients with a form of validation of their anatomical sciences teaching experience. 3. Encourage recipients to develop a professional teaching philosophy and portfolio. These objectives have been met by providing students first with a foundation in the gross anatomy and neuroscience courses (one or both depending on their track) followed by a faculty-supervised critique of the their teaching skills both in the lecture hall and laboratory setting. Of the seven students who have completed the certificate since 2012, five chose the gross anatomy track and two chose the neuroscience track. Students were provided with numerical and qualitative faculty critiques of their lectures in the professional anatomy/neuroscience courses. In the laboratory setting, students were paired with three-four faculty during dissections so that they could observe different teaching styles and have feedback from several faculty members. In addition students in the ANA 609: Educational Strategies in the Anatomical Sciences course complete a teaching philosophy and several components of a teaching portfolio that are often requested upon any job application with a substantial teaching component.
Have the educational needs which triggered the development of the graduate certificate been satisfied?	Yes, the graduate certificate in teaching was initiated to provide instruction and feedback to graduate students interested in a teaching career. There are few PhD programs available in medical education in which students would be specifically trained to teach a dissection-based gross anatomy course. Some doctoral (Albertine 2008; Brokaw and O'Loughlin 2015) and postdoctoral (Fraher and Evans 2009; Bader et al., 2010) programs have recognized the need to create training opportunities for teaching the anatomical sciences to ensure their graduates have marketable teaching skills in addition to their research strengths. The Graduate Certificate in Anatomical Sciences Instruction provides a direct way to enhance graduate credentials for a teaching position.
How many students have been admitted to the certificate program over the last five years?	Nine students have been admitted to the program since 2012.

What is the average amount of time that these students have taken to complete the program?	The average amount of time from acceptance to certificate completion is two years. This is considering six of the seven students who have completed the program in the last five years. One particular student took considerably longer than this due to enrolling in a professional program for dentistry between classes. Students must first enroll in a gross anatomy or neuroanatomy course and then complete a practicum in this course the following year. The remaining requirements include one session of a seminar course (ANA 600), which is offered yearly, and a department specific teaching course (ANA 609), which is offered every other year.
How many students have graduated from the program over the last 5 years?	Seven students have completed the teaching certificate since the fall of 2012.
What value have the students derived from receiving the graduate certificate?	Two graduates were offered Assistant Professor positions-one in anatomy and one in physical therapy. One graduate was hired as a full-time instructor at a research and teaching intensive university. She was later promoted to an Assistant Professor in the teaching track at the same university. Two students continued their career training as post-doctoral students in research. One student continued her graduate training for a master's degree in the medical sciences. One student continued his professional training in a dental residency.

What is your assessment of the need for this graduate certificate over the next 5 years?

This certificate continues to provide its graduates with a variety of experiences that enhance their competitiveness for teaching-related positions. Students are provided with foundational training in the anatomy and neuroscience disciplines, have opportunities for teaching in professional courses, document faculty and student critiques of their teaching abilities, and develop proficiency in pedagogical strategies for teaching courses at the undergraduate and graduate levels.

As stated previously, many graduate students who are interested in teaching must learn how to teach in addition to their research studies. Often students receive minimal faculty and peer –reviewed feedback on their teaching skills before they enter the workforce. The Certificate in Anatomical Sciences Instruction provides opportunities for students to specifically cultivate their teaching skills and use this feedback for a strong beginning to their teaching portfolio.

A survey was sent out to graduates of the teaching certificate during the summer 2016. I have submitted the results of this survey to a key journal in my field, Anatomical Sciences Education and am currently working on revisions to resubmit for publication. This publication outlines the successful completion of the certificate by 17 students thus far and assesses the students' perception of their own success in the program.

Though this is one comment from a certificate graduate, it nicely summarizes the overall benefit of the certificate:

"This is absolutely a valuable program that no only adds to your CV, but expands your abilities as an educator. As I just finished my first year of teaching, I would tell current students that the first year of your career as an anatomy educator is challenging. Having specific training and mentoring will make such a big difference as you navigate these challenges. While you can never really know what to expect, I feel this program eliminated a few of these ambiguities, making me a better candidate in the job market and the first year of teaching a little more smooth."

Graduate Certificate Renewal

Cognitive Science

Submission Date	2017-10-20 14:11:59
Director of Graduate Certificate	Lawrence Gottlob - Cognitive Science
Email	gottlob@uky.edu
Have the objectives of the certificate been met over the last 5 years?	There have been no graduate students to earn the certificate in the past 5 years.
Have the educational needs which triggered the development of the graduate certificate been satisfied?	I think not. Undergraduate students have completed the Cognitive Science minor, but no grad students have participated.
How many students have been admitted to the certificate program over the last five years?	This is structured so a graduate student applies for the certificate after he/she completes the courses; no admission is involved.
What is the average amount of time that these students have taken to complete the program?	N/A
How many students have graduated from the program over the last 5 years?	0
What value have the students derived from receiving the graduate certificate?	N/A
What is your assessment of the need for this graduate certificate over the next 5 years?	Not needed.

Graduate Certificate Renewal

Public Health Management

Submission Date	2017-10-16 14:25:47
Director of Graduate Certificate	Sarah Wackerbarth, Ph.D.
Email	sbwack0@uky.edu
Have the objectives of the certificate been met over the last 5 years?	Yes
Have the educational needs which triggered the development of the graduate certificate been satisfied?	Yes
How many students have been admitted to the certificate program over the last five years?	23
What is the average amount of time that these students have taken to complete the program?	2 semesters
How many students have graduated from the program over the last 5 years?	9
What value have the students derived from receiving the graduate certificate?	The certificate provides a mechanism for students to enhance management competencies in general and applied to public health organizations.
What is your assessment of the need for this graduate certificate over the next 5 years?	The need for this certificate will grow as the incentives to the traditional healthcare delivery system (e.g., acute care hospitals) to collaborate with the public health sector.

Graduate Certificate Renewal

Submission Date	2017-09-01 12:39:38
Director of Graduate Certificate	Dr. William Still
Email	Valentino.price@twc.com
Have the objectives of the certificate been met over the last 5 years?	Yes
Have the educational needs which triggered the development of the graduate certificate been satisfied?	Yes
How many students have been admitted to the certificate program over the last five years?	58
What is the average amount of time that these students have taken to complete the program?	87
How many students have graduated from the program over the last 5 years?	5

Submission Date	2017-11-07 13:43:56
Director of Graduate Certificate	Morris A. Grubbs and Linda K. Worley
Email	morris.grubbs@uky.edu
Have the objectives of the certificate been met over the last 5 years?	Yes, the certificate curriculum has met the following stated objectives: By completing the course, students will • know what to expect in the various aspects of faculty life and work, including teaching, research, and service responsibilities; • have a broad and deep understanding of the multiple roles of faculty across a range of institutional types; • have both theoretical and practical understanding of teaching and learning; • have a validated teaching experience, mentored by strong faculty and designed to promote reflection and growth; • have a well-developed statement of teaching philosophy and teaching portfolio; • be ready to teach effectively in their discipline to a broad array of students; • have well-honed skills important to their particular situations and interests (e.g., grant writing, diversity, working with first-year students, instructional technologies, inclusivity, assessment).
Have the educational needs which triggered the development of the graduate certificate been satisfied?	Yes. The Graduate Certificate in College Teaching was created to further prepare future faculty to succeed in the faculty job search and to hit the ground running in their first faculty job. Graduates report that the certificate has given them a needed edge in a saturated faculty job market and helped them stand out in the pool of candidates. The coursework and the line on the transcript invariably emerge as a topic during interviews. Alumni also report that the certificate gave them the knowledge and emphasized the skills needed to succeed as a faculty member across the range of faculty work and helped them prioritize and juggle responsibilities to succeed in their positions.
How many students have been admitted to the certificate program over the last five years?	114
What is the average amount of time that these students have taken to complete the program?	Four semesters
How many students have graduated from the program over the last 5 years?	84

What value have the students derived from receiving the graduate certificate?	As mentioned above, graduates regularly report a high rate of preparedness for and success in faculty job searches across the range of institutional types. A survey we conducted five years ago of our certificate alumni (2003-2012) indicated that almost 90% of certificate graduates were in faculty positions. Alumni report they are well prepared to craft effective application letters, to write effective statements of teaching and research, to succeed in faculty job interviews at both teaching and research intensive institutions, to approach service obligations circumspectly (including service to the department, institution, community, and discipline), and to teach, advise, and mentor undergraduates effectively.
What is your assessment of the need for this graduate certificate over the next 5 years?	As the faculty job market continues to shrink while being saturated with qualified PhDs, graduate students seeking faculty careers will continue to benefit greatly from coursework and a mentored teaching practicum to help them optimize their competitiveness in the job market. The Preparing Future Faculty Program has responded to the tightening market also by developing a course to help students envision opportunities beyond the professoriate, identify their transferable skills, and prepare for a range of career tracks. For example, we are now offering a course titled Preparing Future Professionals, which is an elective in the Certificate curriculum.

Proposed Revision to Graduate Certificate in Power and Energy
March 24, 2017

Background and Summary of Proposed Revision

The Graduate Certificate in Power and Energy was officially approved in March 2013. The students fulfill the certificate programs by completing 15 credit hours of required course work. This revision aims to expand the certificate program to meet the needs of more students.

In the proposal, the new graduate certificate program will consist of two tracks: one is the original track, identified as **Track 1 – Training through Course Work**, and the other is the proposed new track, **Track 2 – Training through Course Work and Research**. Both tracks will ensure the fulfilment of the outcomes from the original proposal. The requirements for the new track are specified in a new section of this document starting on page 6.

This revision also adds new faculty directly supporting the graduate certificate program.

The list of elective courses are updated in the following revised document as compared with the original version.

Proposal for a Graduate Certificate in Power and Energy

College of Engineering

Proposal Contact: Dr. Yuan Liao
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Department of Electrical & Computer Engineering
Phone: 859-257-6064
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Purpose and Background

The purpose of the proposed Graduate Certificate in power and energy is to provide students with state of the art knowledge in power and energy areas and produce well trained graduates in power and energy areas.

It is anticipated that there will be a substantial shortage of power and energy professionals in the national labor force in the near future. To help train more power and energy engineers, the Department of Energy (DOE) issued a call for proposals on power and energy workforce training in December 2009. The College of Engineering submitted a proposal and was awarded a grant to create a Power and Energy Institute of Kentucky (PEIK[1]) to train the next generation of power and energy professionals. As part of the proposal, we have proposed to offer a Graduate Certificate in Power and Energy. In close collaboration with industry, the Institute will combine existing UK College of Engineering power engineering courses with newly created courses to provide students with an attractive, clearly-marked pathway into the power engineering workforce.

The Graduate Certificate was approved by the university in March 2013. This revision aims to expand the certificate program to meet the needs of more students.

Graduate Certificate Director

The Director for the Certificate will be PEIK Associate Director for the Graduate Program, Dr. Yuan Liao. Dr. Liao is a member of the College of Engineering faculty who has graduate faculty status in the University. The Certificate academic unit will be the College of Engineering.

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[1] (Note that the term "Power and Energy Institute of Kentucky", PEIK, as used above and in this report is a name of an organized faculty group, as allowed per Academic Regulation AR1:3 for a faculty group organized in response to external funding opportunity, in this case a $2.5M funding from the US Department of Energy. The request for official recognition of the PEIK name within the university has been filed but not yet approved. However, the requested approval of this certificate program should not be contingent on the final recognized name of the power and energy faculty group.)

Admission Requirements

The Certificate Director will be responsible for the certificate curriculum and matters such as: admission to and successful completion of the graduate certificate by students, enforcement of certificate requirements, maintenance of records, advising students on electives, and so forth.

Students who already are or will be enrolled in a degree program, or those who simply apply for Postbaccalaureate (non-degree) status in order to complete the certificate, are eligible to apply for admission. The certificate director may limit admissions so that faculty and other resources available are not overwhelmed.

The minimum requirements for admission to the graduate certificate curriculum are the same as those for post-baccalaureate status. Applications for admission to the Graduate Certificate will be reviewed by the certificate director, who will notify the Graduate School in writing of the student's admission. A student is encouraged to apply and be admitted to the certificate curriculum prior to taking any classes that will be counted towards completion of the certificate.

Certificate Requirements

As required by the Graduate School, a student must maintain a minimum GPA of 3.0 in the set of courses required for completion of the graduate certificate.

Certificate curriculum courses taken at graduate level by a student (undergraduate or graduate) before being admitted to the certificate curriculum will count toward the completion of the certificate.

Graduate courses taken at other universities that are transferrable to UK may be counted toward the completion of the certificate at the discretion of the Certificate Director.

Students can take two tracks to fulfill the certificate requirements.

Track 1 Training through Course Work

In this track, the curriculum of the certificate will consist of 15 credit hours, including four required courses and one elective course. The certificate curriculum is designed to permit completion within one academic year. Students can take appropriate substitute courses for the required courses at the discretion of the Certificate Director to fulfill the certificate requirements.

Certificate curriculum courses taken at undergraduate level can satisfy the requirement for course work in particular topics but do not count toward the completion of the certificate. The student still needs to take appropriate power and energy courses as suggested by the Certificate Director, a total of five courses (15 credits) in order to complete the certificate.

Required courses
Students are required to take all of the following courses, a total of 12 credit hours.

EGR540 Electric Power Economics and Public Policy (3 credit hours): This is an overview class that provides background on: Tariff/rate structures, the role of public service commissions, economic dispatch and generation/load balancing issues, demand management, environmental issues, regulated and deregulated markets, etc.
EGR 542 Electric Power Generation Technologies (3 credit hours): An overview of generation methods, including coal, nuclear, gas turbine, hydro, solar, wind, and biomass.
EGR 546 Power System Fundamentals (3 credit hours): This course is an introduction to power transmission and distribution basics.
EGR 649 Power and Energy Experiences (3 credit hours): Unique experiences through visits to a variety of energy-related sites and hear from topical experts.

EGR542 and EGR546 are offered in each fall semester, EGR540 is offed in each spring semester, and EGR649 is offered in each summer session I.

Elective Course

Students are required to take one course from a list of elective courses in power and energy. The list of courses will be maintained by the Certificate Director, but it is expected to evolve as new courses in power and energy are developed across the College of Engineering. All of the elective courses are 3 credit hours. A list of existing courses currently appropriate as elective courses is given below, which are all existing courses:

EE518 Electric Drives : Study of principles underlying analysis and design of power conditioning motor drives.
EE531 Alternative and Renewable Energy Systems: Study of non-traditional, electric generating systems, and the use of renewable energy sources. Energy sources include solar, wind, hydro, and biomass/biogas. Generating technologies include both inverter based equipment and rotating machinery.
EE532 Smart Grid – Automation and Control of Power System: This course covers introduction to smart grid, key technologies in transmission and distribution systems that enable smart grid, power market structure, and real time pricing.
EE533 Advanced Power System Protection: This course teaches philosophies for protecting power systems, covers micro-processor based relays, and provides projects on relay setting and relay testing.
EE535 Power Generation, Operation and Control: This course covers essential aspects of the energy management system of power systems. Will cover topics: power system economics, state estimation, power system stability, power quality, and fault location.
EE536 Power System Fault Analysis and Protection: This course teaches computer based methods for performing balanced and unbalanced fault analysis of power systems, and principles for protecting power systems.
EE537 Power System Analysis I: Basic concepts relating to electric power systems, with emphasis on the determination of transmission line parameters, representations of components of a power system, and generalized network analysis techniques.
EE538 Power System Analysis II: Introduction to modern power system practices, basic transient and steady-state stability analysis with emphasis on digital techniques.
EE539 Power Distribution Systems: Electric utility distribution power systems, addressing topics such as configuration, equation, customer class data, phase balancing, distributed generation, etc.
EE601 Electromagnetic Energy Conversion I: Generalized electric machine theory; parameter determination. Energy conversion in continuous media including magnetohydrodynamics.
EE603 Power Electronics: Study of solid-state power electronic devices and their applications in power conditioned electric motor drive systems. Examination of control philosophies, steady-state models, and numerical simulation of characterizing differential equations. [To be revised to cover inverters, voltage- and current-sourced converters, compensators and power flow controllers, special purpose FACTS (Flexible AC Transmission System) controllers, Alternative energy integration (wind, solar)]
EE699 Power system analysis using advanced software: Computer aided methods for power system analysis and application of prevailing power system analysis software package to perform various types of analyses
BAE 503 Fundamentals of Biorenewable Resource Engineering: This course introduces students to the science

and engineering of converting Biorenewable resources into bioenergy and biobased produces. Topics include: defining the resource base; physical and chemical properties of biorenewable resources; description of biobased products; methods of production for biorenewable resources; processing technologies for fuels, chemicals, fibers and energy; environmental impacts; and economics of biobased products and bioenergy.
BAE 504 Biofuels: An introduction to the basic principles for the production and utilization of biofuels with special emphasis on ethanol and biodiesel. Process chemistry of biofuels manufacturing, fuel properties and the use of ethanol in internal combustion engines and biodiesel engines will be discussed.
BAE 505 Thermochemical Processing of Biomass: Introduction to thermal and catalytic processes for the conversion of biomass to biofuels and other biobased products. Topics include gasification, fast pyrolysis, hydrothermal processing, syngas to synfuels, and bio-oil upgrading.
CME 515 Air Pollution Control: Kinetics and equilibria of photochemical and "dark" atmospheric reactions. Atmospheric statics and dynamics including lapse rates, inversions, and vertical and horizontal air motion. Single and area source diffusion. Stack meteorology.
CME 599: Energy Systems: Present and Future Technology: A study of current major electrical generation technologies in practice today including how fuels are recovered, processed and converted into electrical power. Coal, oil and gas, nuclear and renewable sources are considered along with the environmental consequences and benefits of each fuel source, as well as how each technology must adapt to meet future energy demands.
ME 530 Gas Dynamics: Consideration of the mass, energy, and force balances applied to compressible fluids. Isentropic flow, diabetic flow, flow with friction, wave phenomena and one-dimensional gas dynamics. Application to duct flows and to jet and rocket propulsion engines.
ME 548 Aerodynamics of Turbomachinery: Turbomachinery is an important part of power generation in modern power plants, wind turbines, and hydroelectric power. Together, ME 548 and ME 549 cover a complete spectrum of power plant power generation systems.
ME 549: Power Generation: Modern power plants for electric power generation and cogeneration. Thermodynamic analysis of different concepts of power plants. Design studies of specific power plants.
ME 563 – Basic Combustion Phenomena (proposed to be renamed as Combustion I): This course provides students with basic knowledge on combustion principles, power generation systems and environmental concerns and control.
ME 626 Advanced Heat Convection: Comprehensive study of heat convection: derivation of equations of convection of mass, momentum, and energy; boundary layer equations; classical solutions of laminar convection problems, turbulent convection; analogies between momentum and energy.
ME 606 Global Issues in Manufacturing: This seminar course will introduce students to a variety of global issues in manufacturing through presentations by leading national and international experts in these domains.
CE 533 Railroad Facilities Design and Analysis: Principles of railroad location, construction, rehabilitation, maintenance, and operation with emphasis on track structure design and analysis, bridges and bridge loading, drainage considerations, track geometry effects, and operating systems analysis. Important to energy/power due to the extensive use of rail to transport fuel and combustion by-products for power generation.
CE 602 Construction Administration: Administration of construction companies and projects, organization, economics, material management, productivity models, labor and equipment tracking, quality control and managerial accounting. Construction labor relations, claims and construction financing are also discussed. Discusses manage processes for constructing industrial facilities.
CE 509 Control of the Construction Project: This course investigates the principles and practices for the control of budget and schedule for construction projects. Topics studied include: estimating construction costs and developing a project budget, planning construction operations and developing a project schedule, documenting and reporting of project progress and spending, and the management of change of contract amount, contract time, and contract scope of work. Energy related due to power plant construction planning and estimating processes.
CE/EGR 553 Environmental Consequences of Energy Production: This course will introduce the relationship of energy, pollution control technology, and the environment. The scientific and engineering aspects of energy production are examined and the associated environmental problems and control technologies are discussed.
CE 652 Fundamentals of Water Quality Control II: Theory and practices of wastewater treatment with emphasis on biological treatment processes for municipal and industrial wastewater treatment. Includes coverage of thermal pollution from industrial activity
CE 582 Advanced Structural Mechanics: Approximate methods of frame analysis; energy principles; flexibility and stiffness methods for trusses, frames, arches, non-prismatic members and flexible connections/supports; influence lines for statically indeterminate structures; introduction to plastic analysis; and use of available computer

programs for structural analysis and matrix operations. Covers design methods for industrial structures.
CE 672 Landfill Design: This course deals with the geotechnical aspects of landfills for the disposal of municipal solid waste. Since landfill design is driven by state and federal regulations, time is taken to review these regulations. Landfills are evaluated as engineered systems consisting of multiple components. Each component is investigated individually, and methods are developed to predict and quantify the performance of these components so that appropriate materials, design criteria, and construction methods can be selected to assure that the landfill will function with minimal environmental impact. Landfills are required for power combustion by product storage and methane gas power generation.
MSE 599 - Electrochemical Energy Storage: Introductory thermodynamics, kinetics, electrochemistry, mechanics of materials, and energy storage with emphasis on batteries and fuel cells.

Track 2 Training through Course Work and Research

In this track, students will need to

- complete a MS thesis or PhD dissertation on research topics of power and energy and 9 credit hours of course work, including at least one of the required courses for Track 1, and two selected from any of the courses listed under Track 1
  or
- complete a MS project on research topics of power and energy and 12 credit hours of course work, including at least two of the required courses for Track 1, and with the other courses selected from any of those listed under Track 1.

The Certificate Director and Student Academic Adviser will determine together whether the students' combination of course work and research work, as documented in a master thesis or project or doctoral dissertation, satisfies all the outcomes of the certificate and whether students need to take additional independent study and produce an additional written report, in order to demonstrate the achievement of all outcomes.

Certificate Outcomes

Upon completion of the certificate, students should

1. have the ability to not only understand the material learned but also to apply what they have learned in new situations.

2. have a broader background and perspective on power and energy issues that includes areas outside technical engineering issues, such as economics, public policy, societal impact.

3. have the ability to take a systems approach to the complex behavior of coupled human, technical and natural systems, behavior that can't be adequately understood by engineers educated within traditional disciplinary boundaries.

All three outcomes will be assessed for all students completing the certificate.

Award of the Certificate in Power and Energy

When the student has successfully completed the last course required for the Graduate Certificate, the student shall notify the Director. The Director shall send a completed, signed Graduate Certificate Completion Form to the Dean of the Graduate School verifying that the student has fulfilled all the requirements for the certificate and requesting award of the certificate. The form requires a listing of the courses completed by the student for the certificate and the grades earned therein. The form is to be accompanied by the printed copy of the student's certificate prepared by the Director for signature by the Dean. The Graduate School shall officially notify the University Registrar of the award of the certificate for posting to the permanent transcript.

The Associated Faculty for the Certificate and the Departments They Represent

The list below shows the Faculty of Record responsible for the certificate implementation and development:

Dr. Yuan Liao - PEIK Graduate Certificate Director and Main Contact (Electrical and Computer Engineering): Power transmission and distribution, system protection and fault monitoring, power market, power system optimization and economics.
Dr. Rodney Andrews (Chemical and Materials Engineering, and Director, Center for Applied Energy Research): Activated carbon materials, Agriculture, Biotechnology, carbon fiber formation, Carbon materials, Energy, Environment, Nanotube synthesis, Nanotube-polymer and nanotube-carbon composite materials, Pitch chemistry and characterization.
Dr. Y.T. Cheng (Chemical and Materials Engineering): Materials for Energy Conversion and Storage, Nanostructured Materials, Sustainable Manufacturing.
Dr. Donald Colliver (Biosystems Engineering): P.E. PM-FASHRAE. Energy efficient and green facility design, thermal and electrical solar energy, codes and standards
Dr. Aaron Cramer (Electrical and Computer Engineering): Power system analysis and power electronics.
Dr. Paul Dolloff (Electrical and Computer Engineering): (Adjunct) Power delivery (transmission and distribution) and distributed generation. Teaching includes Power Distribution Systems, System Protection, and Renewable/Alternative Energy Systems. Senior Engineer in the R&D Department of East Kentucky Power Cooperative, an electric utility.
Dr. Zongming Fei (Computer Science): Communications and networking.
Dr. Jack Groppo (Mining Engineering): Mineral Processing, Surface Chemistry, Power Generation, Industrial and Coal Utilization By-product Recycling.
Dr. Larry Holloway (Electrical and Computer Engineering). Experience in administration and project management, including industrial extension and professional development education programs. Research and teaching area in systems and control.
Dr. Dan M. Ionel (Electrical and Computer Engineering): alternative and renewable energy technologies, electric machines and power electronic drives, electromagnetic devices, electric power systems, smart grids and buildings.
Dr. Steve Lipka (Center for Applied Engineering Research, and adjunct faculty, Electrical and Computer Engineering): materials and device development for electrochemical energy storage systems, including systems for distributed electric utility grid.
Shiela Medina (Center for Applied Energy Research) Associate Director, Research Program Manager.
Wilda Moore (Electrical Engineering): Electric Machinery.
Dr. Mike Musulin II (Electrical and Computer Engineering) Energy and public policy.
Dr. Sue Nokes (Biosystems Engineering): Process Engineering for Converting Lignocellulosic Biomass into Biofuels and Biochemicals.

Dr. Johné Parker (Mechanical Engineering) : Image-Processing, Imaging Sensor/System Modeling, Vision System Hardware/Software Design.
Dr. Jeffrey Seay (Extended Campus Programs, College of Engineering): Sustainability, Green Engineering, Biofuels, Computer Aided Process Engineering, Process Design, Process Safety.
Dr. Vijay Singh (Electrical and Computer Engineering): Solar energy harvesting, including advanced photovoltaics and nanostructured solar cell devices.
Dr. Joseph Sottile (Electrical and Computer Engineering): Electrical system protection and safety, detection of electrical component incipient failure, and electrical energy management.
Dr. Timothy Taylor (Civil Engineering): Infrastructure development and management, nuclear power construction, infrastructure public policy, energy economics.
Dr. Y. T. Wang (Civil Engineering): Biotransformation of Metals Areas, Kinetics of Anaerobic Processes, Water Pollution Control.

As members of this group depart, the remaining members will recommend replacements to the Dean of the College of Engineering, who will make the appointment.

The certificate program was developed with input from several groups:

1. The Power and Energy faculty working group in the college of engineering defined the structure of the certificate and will continue to provide oversight to its administration. The working group corresponds to faculty participants from multiple engineering disciplines who are involved in the Power and Energy Institute of Kentucky (PEIK) sponsored by the Department of Energy grant mentioned above. Beyond the existence of the grant, this advisory group membership will be defined by appointment of the Dean of Engineering. Leadership of this faculty group currently resides with the Chair of Electrical and Computer Engineering, as the Principal Investigator of the PEIK grant from DOE. The leadership of the group in the future will be by appointment of the Dean of Engineering.
2. There is also a Power and Energy External Advisory Board that was established as part of the initial grant. This group includes representatives from industry and government. This group reviewed and influenced the structure of this proposed certificate program. This advisory board will continue into the future to provide advice on power and energy courses and the undergraduate certificate.
3. As part of the requirements of the founding grant, there is a Power and Energy Internal Advisory Board, consisting of department chairs of each of the engineering departments most closely associated with the program (Biosystems Engineering, Chemical and Materials Engineering, Civil Engineering, Electrical and Computer Engineering, Mechanical Engineering, and Mining Engineering). This board has also reviewed and influenced this proposed certificate program.

Assessment for the Certificate Program

Assessment for instructors and courses within the Certificate Program will be performed in standard university fashion via regular teaching and course evaluations. Assessment for students in the program will be through course grades in the program, with a minimum GPA requirement as discussed above.

The overall Certificate Program will be assessed through regular review of the Power and Energy faculty and the Power and Energy External Advisory Board (both mentioned above). The External Advisory Board consists of industry representatives that will provide feedback on the material covered in the curriculum and on the quality of the students coming through the certificate program. The enrollment numbers in the program will also be regularly reviewed and will be considered an assessment measure, as the original goal of the US Department of Energy funding for this program was to produce students with power and energy knowledge and skills, as taught by the curriculum of the certificate program.

Fill out this form to change an existing certificate. This form should be used for both undergraduate certificates and graduate certificates.

Once approved at the college level, your college will send the proposal to the appropriate Senate academic council (HCCC and/or GC) for review and approval. Once approved at the academic council level, the academic council will send your proposal to the Senate Council office for additional review and then a 10-day posting online, during which senators review on their own and have an option to register an objection if they so desire. If no objection is raised to the Senate Council Office within ten days of the posting the proposal, then the graduate certificate change is approved. The Senate Council Office will report approvals to the Provost, Registrar and other appropriate entities, including the contact person.

For each change, you MUST enter the current language/requirement as well as the proposed change.

SUMMARY OF CHANGES

Check all that apply.

☐ Courses ☐ Certificate Name ☐ Total required credit hours ☐ Certificate review
☐ Criteria for admissions/progression/termination ☒ Other

1. General Information

1a	**Change is for:**	☐ **UNDERGRADUATE CERTIFICATE**	OR	☒ **GRADUATE CERTIFICATE**	
1b	Date of contact with Institutional Effectiveness (IE)[1] :	4/13/2017			
	☒ Appended to the end of this form is a PDF of the reply from Institutional Effectiveness.				
1c	College[2]:	Engineering	Department[2]:	Electrical and Computer Engineering	
1d	CIP code:				
1e	Current certificate name:	Power and Energy	*Proposed certificate name:*	*unchanged*	
1f	Today's Date:	3/24/2017			
1g	Requested effective date:	☒ Fall semester following approval.	OR	☐ Specific Date[3]: *Fall 20*	
1h	Contact person name:	Yuan Liao	Phone / Email:	8592576064 / yuan.liao@uky.edu	

2. Overview of Changes

2a	Describe the rationale for the change(s), including (as appropriate) input from an advisory board, professional body, etc. (*450 word limit*)
	The Graduate Certificate in Power and Energy was officially approved in March 2013. The students fulfill the certificate programs by completing 15 credit hours of required course work. This revision aims to expand the

[1] You can reach Institutional Effectiveness by phone or email (257-2873 or institutionaleffectiveness@uky.edu).
[2] It is not possible to change the home academic unit of a certificate via this form. To change the home unit, visit http://www.uky.edu/faculty/senate and search for forms related to academic organizational structure.
[3] No certificate changes will be effective until all approvals are received.

certificate program to meet the needs of more students.

In the proposal, the new graduate certificate program will consist of two tracks: one is the original track, identified as Track 1 – Training through Course Work, and the other is the proposed new track, Track 2 – Training through Course Work and Research. Both tracks will ensure the fulfilment of the outcomes from the original proposal.
In the new track, students will need to

- complete a MS thesis or PhD dissertation on research topics of power and energy and 9 credit hours of course work, including at least one of the required courses for Track 1, and two selected from any of the courses listed under Track 1

or

- complete a MS project on research topics of power and energy and 12 credit hours of course work, including at least two of the required courses for Track 1, and with the other courses selected from any of those listed under Track 1.

The Certificate Director and Student Academic Adviser will determine together whether the students' combination of course work and research work, as documented in a master thesis or project or doctoral dissertation, satisfies all the outcomes of the certificate and whether students need to take additional independent study and produce an additional written report, in order to demonstrate the achievement of all outcomes.

These proposed changes were discussed and approved at the PEIK Industry Advisory Board meeting held on 2/24/2017 and at the PEIK Faculty meeting held on 3/24/2017.

3a.	Will the requested changes result in the use of courses from another unit?	Yes ☐	No ☒
	If "Yes," describe generally the courses and how they will used.		
	If "Yes," two pieces of supporting documentation are required. ☐ Check to confirm that appended to the end of this form is a letter of support from the other units' chair/director[4] from which individual courses will be used. ☐ Check to confirm that appended to the end of this form is verification that the chair/director of the other unit has consent from the faculty members of the unit. This typically takes the form of meeting minutes.		

3. Non-Course Related Changes

3a	Will the certificate's admissions and/or application procedures change?	Yes ☐	No ☒
	If "Yes," describe below. (*150 word limit*)		
	Current:	*Proposed:*	

4. Course-Related Changes

4a	Will the required courses for the certificate change? (If "Yes," indicate and note the changes in the area below. If "No," indicate and proceed to 4b.)	Yes ☐	No ☒
	If "Yes," note the specific changes in the grid below.		

Current			*Proposed*			
Prefix &	Credit	Title	*Prefix*	*Credit*	*Title*	*Course Status*[5]

[4] A dean may submit a letter only when there is no educational unit below the college level, i.e. there is no department/school.
[5] Use the drop-down list to indicate if the course is a new course ("new"), an existing course that will change ("change"), or if the course is an existing course that will not change ("no change").

Nmbr	Hrs		*& Nmbr*	*Hrs*		
						Select one....
						Select one....
						Select one....
						Select one....
						Select one....

4b	Provide the Bulletin language about required courses.

4b	Will the elective courses for the certificate change? (If "Yes," indicate and note the changes in the area below. If "No," indicate and proceed to 5a.)	Yes ☐	No ☒
	If "Yes," note the specific changes in the grid below.		

Prefix & Nmbr	Credit Hrs	Title	*Prefix & Nmbr*	*Credit Hrs*	*Title*	*Course Status*[6]
						Select one....
						Select one....
						Select one....
						Select one....
						Select one....
						Select one....

4c	Provide the Bulletin language about elective courses.

5. Other Changes

5a	Are there any other changes to the certificate? If "Yes," note below. *(150 word limit)*	Yes ☒	No ☐
	In addition to the original track, a new track was proposed, called Track 2 – Training through Course Work and Research. Students will need to • complete a MS thesis or PhD dissertation on research topics of power and energy and 9 credit hours of course work, including at least one of the required courses for Track 1, and two selected from any of the courses listed under Track 1 or • complete a MS project on research topics of power and energy and 12 credit hours of course work, including at least two of the required courses for Track 1, and with the other courses selected from any of those listed under Track 1.		

6. Approvals/Reviews

Information below does not supersede the requirement for individual letters of support from educational unit

[6] Use the drop-down list to indicate if the course is a new course ("new"), an existing course that will change ("change"), or if the course is an existing course that will not change ("no change").

administrators and verification of faculty support (typically takes the form of meeting minutes).			
	Reviewing Group Name	**Date Approved**	**Contact Person Name/Phone/Email**
6a	(Within College)		
	College of Engineering	**11/8/17**	**Kimberly Anderson / 7-8827 / kimberly.anderson@uky.edu**
			/ /
			/ /
			/ /
6b	(Collaborating and/or Affected Units)		
			/ /
			/ /
			/ /
			/ /
			/ /

6c	(Senate Academic Council)	**Date Approved**	**Contact Person Name**
	Health Care Colleges Council (if applicable)		
	Graduate Council		

CHANGE DOCTORAL DEGREE PROGRAM FORM

GENERAL INFORMATION

College:	Gatton College	Department:	BUA
Current Major Name:	BUAD-PhD	Proposed Major Name:	____
Current Degree Title:	PhD	Proposed Degree Title:	____
Current Formal Option(s):	BUA	Proposed Formal Option(s):	____
Current Specialty Fields w/in Formal Option:	None	Proposed Specialty Fields w/in Formal Option:	1)Accounting 2)Finance & Quantitative Methods 3)Management 4)Marketing & Supply Chain

Date of Contact with Institutional Effectiveness[1] (OSPIE@l.uky.edu):	____				
Bulletin (yr & pgs):	____	CIP Code[1]:	52.0101	Today's Date:	10/10/17
Accrediting agency (if applicable):	____				
Requested Effective Date:	☒ Semester following approval.	OR	☐ Specific Date[2]:	____	
Dept Contact Person:	Jeannie Graves	Phone:	257-7675	Email:	jeannie.graves@uky.edu

CHANGE(S) IN PROGRAM REQUIREMENTS

	Current	*Proposed*
1. Number of transfer credits allowed:	____	____
(Maximum is Graduate School limit of total of 9 hours (or 25% of the credit hours needed to fulfill the pre-qualifying residency requirement.)		
2. Residence requirement: *(Minimum of one year before and after Qualifying Exams.)*	____	____
3. Language(s) and/or skill(s) required:	____	____
4. Provisions for monitoring progress and termination criteria:	____	____
5. Total credit hours required:	____	____
6. Required courses:	____	____
7. Required distribution of courses within program:	____	____
8. Minor area or courses outside program required:	____	____
9.Distribution of courses levels required (400G-500/600-700):	____	____

[1] Prior to filling out this form, you MUST contact Institutional Effectiveness. That office can also assist with the CIP code.
[2] Programs are typically made effective for the semester following approval. No program will be made effective until all approvals are received.

CHANGE DOCTORAL DEGREE PROGRAM FORM

10. Qualifying examination requirements:	———	———

11. Explain whether the proposed changes to the program (as described in numbers 1 through 10) involve courses offered by another department/program. Routing Signature Log must include approval by faculty of additional department(s).

———

12. Other requirements not covered above:

———

13. What is the rationale for the proposed changes? If the rationale involves accreditation requirements, please include specific references to those requirements.

This change will add the specialty field to the student transcripts and Plan of Study. Improved reporting from SAP.

Jackson, Brian A

From: Wilkinson, Harvie
Sent: Monday, November 13, 2017 3:31 PM
To: Jackson, Brian A
Cc: Troske, Kenneth; Kemper, Beverly
Subject: Request to add LAW 942 "The Law and Business of Intellectual Property Management" as an elective in the MBA program

Brian,

We are requesting to add LAW 942 as an elective option in both the One Year and Professional Evening MBA cohorts starting in the 2018 Spring semester.

As you are aware, we adjusted our MBA curriculum for both cohorts by adding a number of elective options starting this academic year. Presently, the One Year cohort provides for four electives while the Professional Evening cohort provides for three electives. For the 2017-2018 academic year, we initially offered a total of nine elective options for both cohorts, including a study abroad component. Recently, we have considered adding more elective options, some of which have been brought to our attention by students who are seeking to take courses which are more in line with their professional and career interests and some through contacts with faculty in other colleges and schools throughout the campus.

We would like to add LAW 942 as an elective starting in the 2018 Spring semester which is being taught by Ian McClure. This course, which is actually designed for both law and MBA students, will be a more enriching course if the composition of the class is made up of both law and MBA students. We presently have as an MBA elective, MBA 624, "Entrepreneurship and Business Start-ups." We view LAW 942 as complementary to MBA 624 in that LAW 942 covers the commercialization and legal protection of intellectual property which is briefly covered (but not in any detail) in MBA 624. There are a number of MBA students who are interested in entrepreneurship that would benefit greatly from having both of these courses offered in the program.

Please let me know if you need any further background regarding our request.

Regards,

Harvie

Harvie Wilkinson
MBA Director
University of Kentucky
Gatton College of Business & Economics
105 Gatton College of Business & Economics Building
Lexington, KY 40506-0034
Ph. 859-257-1924
Cell 859-221-2527

The Law and Business of Intellectual Property Management

Instructor: Ian D. McClure

Tel: 615.945.0818 (cell)
Email: ian.mcclure@uky.edu

Tel: 615.945.0818
SPRING 2018

COURSE DESCRIPTION:

This is a broad course covering, from the perspective of the in-house IP manager or executive, the critical areas of IP portfolio management in a variety of business settings in the global economy, including methodologies to evaluate, value and create value from that IP. The course will first adopt a macro lens, covering market participants and dynamics, course of dealing, policy shifts and contemporary thinking related to IP. Next, adopting a micro lens, the course will teach principles of IP portfolio development, protection, and strategic management, focusing on patents and addressing copyrights and trademarks where applicable. The class will explore IP management from preliminary asset development to stages of portfolio maturation and disposition, including business, legal, and policy considerations at each step. Various academic theories, scenarios and cases will be discussed, such as: law and economic theory surrounding IP management, invention disclosure, product-IP mapping and protection, corporate culture and approval processes relative to IP, international relations, technology transfer and licensing, mergers and acquisitions, asset divestitures and monetization, patent litigation, the rise and use of intermediaries, regulatory agencies and anti-trust matters related to IP, reorganization and bankruptcy, taxation of IP assets, and more. The class will also offer a small focus on the role and importance of valuation, and the critical component that valuation plays to lawyers in patent litigation damages, patent licensing and executing other IP transactions.

We discuss the models and the general findings from international research. With the help of real world cases and other academic pursuit, the course offers a blend of theory, models, and empirical knowledge of what works, what doesn't and what to know in the creation and strategic utilization of intellectual property in a global business environment.

COURSE OBJECTIVES:

1. To provide a solid background in the theory and practice of the legal, organizational and managerial aspects of global IP management
2. To link legal and strategic concepts, models, approaches, and frameworks to the management of innovative enterprises in global settings.
3. To provide the students with a better understanding of how intellectual property assets are procured and utilized by the organization, how such processes are implemented and measured, and how the enterprise acts to protect and create value from its intangible assets in the world economy.

LEARNING OBJECTIVES:

1. Students will learn what companies can do to secure, protect, and create value from intellectual property assets.
2. Students will learn what considerations must be made related to IP through various corporate events and environments, including through product development, M&A activity, litigation, and revenue generation.
3. Students will learn what roles service providers, intermediaries, and in-house IP and innovation teams play with respect to the IP life cycle.

REQUIRED TEXTS:

1) M. Blaxill and R. Eckardt (2009) The Invisible Edge: Taking Your Strategy to the Next Level Using Intellectual Property, Penguin Group
2) M. Phelps and D. Kline (2009) Burning the Ships: Intellectual Property and the Transformation of Microsoft, John Wiley & Sons
3) Various articles and documents described for class reading below.

STRONGLY RECOMMENDED READINGS:

1. E. Geisler (2000) The Metrics of Science and Technology, Greenwood/Springer Publishers
2. E. Geisler (2001) Creating Value with Science and Technology, Greenwood/Springer Publishers
3. E. Geisler (2008) Knowledge and Knowledge Systems: Learning from the Wonders of the Mind, IGI Global Publishers
4. M. Rashid Khan (2011) Changing the World by Technology Transfer: Licensing and Commercializing of Intellectual Properties, Xlibris Corporation, (paperback)
5. H. Odagiri, A. Goto, A. Sunami, and R. Nelson, Eds. (2010) Intellectual Property Rights, Development, and Catch Up: An International Comparative Study, Oxford university Press.
6. R. Merges, P. Merges, and M. Lemley (2012) Intellectual property in the New Technological Age, Aspen Publishers
7. W. Landes and R. Posner (2003) The Economic Structure of Intellectual Property Law, Harvard University press
8. E. Helpmann (1993) "Innovation, Imitation and Intellectual Property Rights", Econometrics, 61(6): pp. 1247-1280
9. B. Andersen, F. Rossi, and J. Stephan (2010) "Intellectual Property Marketplaces and How They Work: Evidence from the German Pharmaceutical Firms", Intereconomics, 45(1): pp. 35-47
10. S. Shavell and T. Van Ypersele (2001) "Rewards versus Intellectual Property Rights", Journal of Law and Economics, Vol. 44, pp. 525-547

11. United nations, (2013) Intellectual Property Commercialization: Policy Opinions and Practical Instruments, United Nations press
12. C. Raasch (2009) "Strategic Options to tackle patent expiration: Theoretical Framwwork and Case Studies" International Journal of Intellectual Property Management, 3(3): pp, 278-309

RECOMENDED READINGS:

1. R. Merges (2011) Justifying Intellectual Property, Harvard University Press
2. A. Osling (2010), Intellectual Property Rights and International Trade, Nova Science Publishing
3. L. Bently, U. Suthersanen, and P. Torremans (2010), Global Copyright: Three Hundred Years Since the Statute of Anne, From 1709 to Cyberspace, Edward Elgar Publishers
4. R. Klein, U. de Hann, and A. Goldberg (2010), "Overcoming Obstacles Encountered on the Way to Commercialize university IP", Journal of Technology Transfer, 35: 671-679
5. W. Shi (2010) Intellectual Property in the Global Trading System: EU-China Perspective. Springer
6. L. Palombi (2010) Gene Cartels: Biotech Patents in the Age of Free Trade. Edward Elgar Publishers
7. A. Wurzer, D. Reinhardt, and S. Kouhry (2010), Evaluation of Patents, Kluwer Law International
8. C. Deere (2011) The Implementation Game: The TRIPS Agreement and the Global Politics of Intellectual Property Reform in Developing Countries, Oxford University Press
9. J. Paasi, T. Luoma, K. Valkokari, and N. Lee (2010), "Knowledge and Intellectual Property Management in Customer-Supplier Relationships", International Journal of Innovation Management, 14 (4): 629-654
10. J. Morin (2006) "Tripping Up TRIPS Debates IP and Health in Bilateral Agreements", International Journal of Intellectual Property Management, 1(1/2), 37-53.

GRADING:

1. Final Project (will be provided in class) – 80%
    a. For the Final project, students will receive a hypothetical fact pattern involving real-world intellectual property. Students will be expected to conduct research related to the facts and utilize the content covered throughout the course to deliver a memorandum (minimum 1 page/maximum 10 pages, single spaced) and supporting materials (excel spreadsheet/tables/etc), if any, identifying issues, drawing conclusions and making recommendations. In addition, each student will be asked to prepare a presentation that summarizes the student's findings and recommendations, and present those findings in an open setting for all students to optionally attend (not required that students attend other presentations). The presentation may be up to 30 minutes.
2. Class preparation and Assignments (will be provided in classes) – 20%

TARGET SCHEDULE OF CLASSES

Class 1

- **Class roadmap and think tank**:
  - History of and general distinctions in purpose, process, characteristics and conventions in corporate management of patents, copyrights, and trademarks.
  - Why? Who? How? What is changing?

- Readings:
  - **Invisible Edge,** Intro: pp. 1-17, Chapter 1 pp. 29-42;
  - I. McClure, *Commoditizing Intellectual Property Rights: The Practicability of a Commercialized and Transparent International IPR Market and the Need for International Standards*, 6 Buff. Intell. Prop. L.J. 101, (will email to class) (pp. 101-108 only);
  - I. McClure, *From a Patent Market for Lemons to a Marketplace for Patents: Benchmarking the Evolution of IP as an Asset Class*, 19 Chap. L. Rev. 759 (2015) (will email to class).

Class 2

- **IP Audit: Understanding what you have and what you need to maximize its value**:
  - Dissecting a patent on its face;
  - Conducting an IP audit;
  - Qualitative evaluation of coverage, protection, and general value to company;
  - Patent landscape analysis;
  - Identifying copyrights, proprietary information/processes, trade secrets;
  - Protecting the nest eggs;
  - Important characteristics of a trademark to a lawyer vs. business person

- Readings:
  - **Invisible Edge,** Chapter 3 pp. 77-97; Chapter 5 pp. 123-152
  - I. McClure, *Due Diligence and Intellectual Property: Shifting the Practice from Ex Post Facto to Ex Ante Facto*, The Federal Lawyer (2010) found at http://www.ipprospective.com/wp-content/uploads/2009/01/ipduediligence2.pdf#!
  - I. McClure, *Intellectual Property Audit Can Maximize a Company's Value*, Business First (2009) found at http://www.ipprospective.com/wp-content/uploads/2009/01/ipaudit.pdf.
  - US Patent 6,013,007 (read patent and come prepared to discuss it)

Class 3

- **Risk Management**:
  - Risk taking and risk mitigation
  - Internal reporting
  - Patents as probabilistic rights
  - Validity and Prior Art
  - Benchmarking
  - Patent search practice: Is there a duty?
  - Freedom to operate and Patent claims charting
  - Patent search: consequences of successful search
  - Copyright: fair use vs. free use
  - Copyright clearance process and tools
  - Trademark search

- Readings:
  - **Invisible Edge,** Chapter 3 pp. 77-97; Chapter 5 pp. 123-152
  - T. Chiang, *The Reciprocity of Search*, 66:1 Vand. L. Rev. 1 (pp. 1-14; 31-47)
  - C. Chien, Predicting Patent Litigation, 90 Tex. L. Rev. 293 (pp. 284-308; 316-328)
  - US Patent 6,013,007 (quick review of backward cited patents)
- Assignment for discussion:
  - Using US Patent 6,013,007 as the subject, identify (1) a product that could not have been developed after it was filed, and (2) a product that could have been developed the day after it was filed that accomplishes substantially the same effects.

Class 4:

- **Corporate Governance and IP**
  - IP Shareholder Value Impact
  - Patent Risk-taking Accountability
  - Public Corporation Disclosures to Shareholders
  - M&A and other material corporate events
  - Special committees and board decisions
  - Fiduciary Duties and Shareholders

  - Upon completion of this unit, the student will be able to do the following.
    - Identify basic corporate governance principles for reporting, disclosing and other internal decision making processes related to management of IP and activities responsive to IP risk.

        - Integrate different shareholder interests and disclosure requirements within a public corporation or private corporation.
- Reading:
    - I. McClure, *Accountability in the Patent Market: A Duty to Monitor Patent Risk from the Boardroom*, 31 Santa Clara High Tech. L.J. 217 (2015)
        - Source: http://digitalcommons.law.scu.edu/cgi/viewcontent.cgi?article=1593&context=chtlj
    - E. Causevic and I. McClure, *Board Accountability for Patents*, Intellectual Asset Management (IAM) Magazine, Issue 74, November 2015 (will be emailed to class)
    - I. McClure, *Accountability in the Patent Market Part II: Should Public Companies Disclose More to Shareholders?*, 26 Fordham IP, Media and Ent. L.J. (Forthcoming 2016) (will be emailed to class)
    - McClure, I.D. and Causevic, E., *Accountability in the Patent Market Part III: Effectively Discharging Fiduciary Duties in IP-rich M&A*, UC Berkeley Business Law Journal (Forthcoming 2017) (will be emailed to class)

- Assignment for discussion:
    - **Hypothetical Fact Pattern**
    - Develop a hypothetical fact pattern under which each of the following occurs (the hypothetical may be one fact pattern, or a separate fact pattern for each):
        - Shareholders of a company may have a reasonable claim for breach of a board's fiduciary duty to monitor illegal acts of the corporation related to IP.
        - A company's board has satisfied its duty of oversight with respect to patent risk.
        - A public company must disclose information related to IP in a Form 8-k.
        - A board must sell the company, which has a large IP portfolio, for the highest price.

Class 5:

- **"Useful" Patent Valuation**
    - Drivers of Patent Value
    - Tools to Value Patent Portfolios
    - Valuation perspectives:
        - Litigation
        - Licensing

        - Patent sale/purchase
        - Capital raise
        - Accounting
        - Tax
        - Public company reporting
    - Importance of putting a value of patent portfolio
    - Context specific valuation: when to value, and when to not
    - Use of a patent valuation in various transaction and litigation scenarios
- Reading:
    - M. Blaxill and R. Eckardt (2009), **The Invisible Edge: Taking Your Strategy to the Next Level Using Intellectual Property**, Penguin Group.
      Chapter 2, pp. 43-69
    - Alternate Approaches to the Valuation of Intellectual Property
    - Bloomberg Business, Google Says Over Half of Motorola Purchase Price for Patents, 2012
    - Forbes, Why Google Did Buy Motorola, 2012
    - Facts about Google's purchase of Motorola
- Focus of class:
    - Compare Contexts
        - What are the major differences in a valuation of a patent portfolio in the context of a capital raise, from the valuation of a patent portfolio in preparation for a license negotiation? How does a lawyer use this information?
    - Traditional Valuation Methods
        - Explain the difference between the Cost Approach, the Income Approach, and the Market Approach using IP-based examples and relevant inputs. Performing basic research to identify data for performing each of the approaches, identify where you might find such data (general sources or source types).

- Assignment for discussion:
    - Pick a patent, and provide a high-level valuation conclusion using each of the income and market approaches, and explain how you came to that conclusion (each step and input to arrive at the result). Identify all sources and assumptions, if you need to make any, and why you made that assumption. A financial model is not necessary, but is certainly encouraged.

Class 6:

- **The Collaboration Imperative**
  - IP's inclusive value compared to exclusive value
  - Filling Gaps to Compete through Open Innovation Initiatives or Joint Venture
  - The Role of Universities and Private/Public Research Laboratories
  - Corporate collaboration using IP
  - Supply chain and customer relationships
  - Industry protectionism
  - Defensive aggregators and other alliances for collaborative dealing to create network effects
  - Technology standards and patent pools (introduced; more detail later in course)
- Reading:
  - M. Phelps and D. Kline (2009), **Burning the Ships: Intellectual Property and the Transformation of Microsoft**, John Wiley & Sons.
    Chapter 1, pp. 1-32
  - DOJ Business Review Letter, MPEG-LA, found at
    http://www.justice.gov/atr/public/busreview/215742.htm
  - DOJ Business Review Letter, IPXI, found at
    http://www.justice.gov/atr/public/busreview/295151.htm
  - Standard Essential Patents and FRAND
    - IAM Article on SEPs and FRAND (will be emailed)
- Upon completion of this unit, the student will be able to do the following.
  - Use patents collaboratively, tapping into their inclusive nature to build value and not just their exclusive nature
  - Describe the complex existence of standard setting organizations (SSO) and standard essential patents
  - Describe the creation, management and valuation complexities related to standard essential patents

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Class 7:

- **IP Management Resources and Third Party Service Providers**
  - Role of Specialists and Intermediaries
  - Rise of IP as Tradable Asset Class
  - How and When to Use Third Parties
  - Application of Methodologies and Business Models to Various Scenarios
  - Monetization and Privateering
  - Law Firms vs. Specialty Firms vs. Analytics
  - The Great NPE Debate.

- Budgeting: Internal vs. External
- Upon completion of this unit, the student will be able to do the following.
  - Identify the basic considerations related to managing an IP department under a budget and a P&L mandate
  - Review different creative approaches to monetize or extract other value out of IP
  - Describe the ecosystem of the patent market, and what resources might be at your disposal at all times.

- Readings:
  - **Invisible Edge**, Chapter 9 pp. 264-280
  - Ray Millien, *Who are the players in the IP Marketplace?*, IP Watchdog (Jan. 23, 2013), found at http://www.ipwatchdog.com/2013/01/23/ip-landscape/id=33356/#F2
  - Allan W. Wang, *Rise of the Patent Intermediaries*, 25 Berk. Tech. L. J. 159, found at http://www.btlj.org/data/articles/25_1/0159-0200%20Wang_Web.pdf
- Assignment (and in-class exercise):
  - Budgeting for a Corporate IP Management Office Exercise (to be handed out)

Class 9:

- **Licensing, Enforcement and Monetization Business Models:**
  - Developing the case for monetization/enforcement
  - Determining Evidence of Use
  - Legal and Business Considerations (risks and other stakeholders)
  - Changing Business Models
  - Offer letters and demand letters
  - Declaratory Judgment Actions
  - Enforcement Tactics and Forums (ITC, Federal Circuit, and Alternative Dispute Resolution)
  - Protection and Punitive Measures (Defensive Suspension Clauses, etc.)
  - Licensing terms
  - MOU to Term Sheet to License Agreement
  - Term sheet basics
  - License agreement nuances
  - Cross-Licensing
  - Compensation Structures: Running Royalty Vs. Paid-Up
  - RAND\
- Reading:
  - PWC 2015 Patent Litigation Study
- Upon completion of this unit, the student will be able to do the following.
  - Review cases and the relevant materials to socialize an enforcement decision internally in a corporation
  - Review term sheets with an understanding of deal terms for licensing and patent sales
  - Review a multitude of monetization options – assertion-based and non-assertive.

- Draft a license offer letter or a demand letter, understanding the nuances and differences of each.

- Assignment (and in-class exercise):
  - Licensing negotiation (will be distributed in class)

Class 10:

- **Licensing, Enforcement and Monetization Business Models (Continued)**
  - Other monetization business models
  - Privateering
  - IP-backed credit facilities
  - IP Insurance
  - Copyright Licensing Conventions
  - Performance Rights Organizations
  - Copyright Royalty Board
  - Music licensing, publishers and songwriters

- Reading:
  - *Intellectual Property Insurance: Changing the Economics of the IP Litigation Landscape*, THE FEDERAL LAWYER (July 2010)
  - *The Next Big Thing on Monetizing IP: A Natural Progression to Exchange-Traded Units*, Co-authored with Jim Malackowski, LANDSLIDE, Volume 3, Number 5 (ABA, May/June 2011)
  - Attack of the Patent Privateers (Forbes)
  - Another Inaccurate Epithet: Patent Privateer (IP Nav)
  - Intellectual Property Financing – An Introduction (WIPO)

- Upon completion of this unit, the student will be able to do the following.
  - Review various alternative monetization approaches
  - Identify alternative financing sources using IP as a resource
  - Describe the differences between patent monetization and copyright monetization

Class 11:

- **Research Institutions: Working with early-stage research to maximize market application**
  - Working With Research Institutions
  - University IP Policy
  - University/Industry Relations
  - The Role of Technology Transfer Office Operations
  - Federally Funded Research
  - Bayh-Dole Act and Foreign Equivalents
- Readings:
  - 35 U.S.C. Chapter 18 - http://www.law.cornell.edu/uscode/text/35/part-II/chapter-18
  - History and Impact of Bayh Dole Act (from the Regents of the Univ. of California) - http://www.ucop.edu/ott/faculty/bayh.html
  - Stanford v. Roche - http://www.patentlyo.com/patent/2011/06/stanford-v-roche-563-u-s-____-2011-in-a-split-decision-the-supreme-court-has-ruled-that-a-federally-funded-contractor.html
  - Guidelines on University-Industry Relations (Univ. of California Berkeley) - http://ipira.berkeley.edu/guidelines-university-industry-relations
- Upon completion of this unit, the student will be able to do the following.
  - Identify research institutions as a resource for IP and innovation management
  - Understand how to work with a university technology transfer office based on various different considerations compared to a corporate IP department.
- Assignment**:**
  - University IP Policy:
    - Identify a university's IP policy (other than one discussed in the lecture) and critique its effect on the relationship between and incentives of the faculty researchers, the technology commercialization office, and potential industry partners. Point out specific language.

Class 12:

- **Technology Standards, Standard Essential Patents, and Patent Pools**
  - Identifying Complimentary IP (Instead of Substitute or Competing IP)
  - Development of Technology Standards
  - Technology consortiums separate from SSO's
  - Joint Licensing Programs and Patent Pools and Related Anti-Trust Concerns
  - Standard setting organizations (SSOs) and IP policies
  - Fair and Reasonable and Non-Discriminatory (FRAND) licensing

- Case law related to FRAND
- Antitrust, the DOJ, the FTC and the ITC
- Standard essential patent (SEP) management

- Readings:
  - Jorge Contreras, Fixing FRAND: A Pseudo-Pool Approach to Standards-Based Patent Licensing, *79 Antitrust Law Journal 47 (2013)*
  - US Department of Justice, Business Review Letter for MPEGLA MPEG-2 Patent Pool
  - Review MPEGLA Website
- Upon completion of this unit, the student will be able to do the following.
  - Describe the management of standard essential patents
  - Demonstrate how to lead a company's management to comprehend the risks and value of participating in standards development and standard essential patent creation
  - Assess the benefits and risks of joining or creating a patent pool
- Assignment:
  - Patent Pool Executive Summary
    - Pretend that you are the administrator of a new patent pool. Develop an executive summary for distribution to all potential pool participants, which outlines all major considerations that the pool must address at their next group meeting. The pool will consist of international companies headquartered all over the world, the patents will be issued worldwide, and the potential licensees are based in and do business all over the world.

Class 13 (optional):

- **IP and Investing**
  - Types of investments related to IP
  - Importance of IP to investments
  - Types of investors and their interest in IP (early stage seed funding, VC, PE, and strategic investments through corporate venturing)
  - Investment banks and IP
  - Debt and IP-secured financing
  - The market for capital and its varying focus on IP
- Reading
  - Patents, Innovation, and Performance of Venture Capital-backed IPO's (Cao, Jiang, Ritter; January 2015 working version)
  - Debt vs. Equity: The Financing of Patent Monetization (Gene Quinn, IP Watchdog)

- Summary of Fortress Investment Group's IP-secured debt deals (will be distributed by email)

Final Class:

- **Review and Final Project Discussion**
- Final project presentations will be 30-minute presentations scheduled throughout the finals period. Presentations will be conducted in a classroom or boardroom on campus as designated by the professor. Final project memoranda and supporting materials will be due on a single date designated by the professor.
