Master of Research

MRES/MPHIL/MD(RES)

Master of Research – MRes/MPhil

MISSION STATEMENT

*Springfield's mission for its **Master of Research (MRes)** programs is to cultivate exceptional researchers, critical thinkers, and innovators across diverse fields. Our commitment is to advance knowledge, expand intellectual boundaries, and address complex global challenges. Through rigorous inquiry, interdisciplinary collaboration, and a passion for discovery, we prepare our MRes candidates to lead transformative research, contribute significantly to academia, industry, and society, and shape the future of their respective disciplines including but not limited to STEMMA, management and humanities.*

The Master of Research (MRes) program at Springfield Research University is purposefully designed to foster research excellence and enhance professional skills. Here are the core pillars of our mission:

1. **Academic Excellence and Critical Thinking:**
    - Rigorous study of research methodologies, data analysis, and scholarly inquiry.
    - Cultivation of critical thinking skills to analyze complex research questions, interpret findings, and design evidence-based investigations.
2. **Cutting-Edge Research and Innovation:**
    - Similar to legal research, our MRes program emphasizes addressing societal challenges through rigorous research.
    - MRes students engage in research on diverse topics, from scientific discovery to social impact.
    - Innovations in research methodologies, data analytics, and interdisciplinary approaches drive our program.
3. **Ethical Leadership and Societal Impact:**
    - MRes graduates serve as ethical leaders in research and academia.
    - They advocate for rigorous methodologies, transparency, and responsible dissemination of knowledge.
    - Their impact extends beyond disciplinary boundaries, promoting advancements that benefit society.

Our aim is to prepare MRes scientists, scholars, and educators who engage in impactful research, contribute significantly to alleviating suffering, and enhance the well-being of individuals, families, groups, organizations, and society as a whole. Springfield Research University is a beacon of scientific excellence, committed to developing high-end skills and promoting innovation. Our MRes program stands at the intersection of rigorous discovery research and societal impact. We believe that true advancement lies in addressing real-world problems, and our students leave with the objectivity required to excel in the dispassionate realm of science. But we don't stop there. Our guiding philosophy extends beyond the lab—our research is a pathway to impacting communities. We collaborate across disciplines, harnessing technology supremacy to accelerate drug discovery, industry transformation, and healthcare solutions. Entrepreneurship and public service are woven into our DNA, ensuring that our intellectual property and products not only shape business but also uplift lives. At Springfield, the highest level of attainment is measured by the extent of impact any endeavor has on communities.

Springfield Research University (SRU) is deeply committed to addressing real-world challenges and creating better environments in communities. Here are some examples of community issues that SRU research will be focused on:

1. **Healthcare Disparities**: SRU researchers will investigate disparities in healthcare access, quality, and outcomes across different demographic groups. Their work aims to improve health equity and reduce gaps in healthcare delivery.
2. **Sustainable Urban Development**: SRU's interdisciplinary teams explore sustainable urban planning, transportation, and housing solutions. They address issues like affordable housing, green spaces, and efficient public transportation systems to enhance community well-being.
3. **Environmental Conservation**: SRU's research contributes to environmental conservation efforts. Projects include studying local ecosystems, promoting renewable energy sources, and developing strategies to mitigate climate change impacts.
4. **Education Equity**: SRU researchers examine educational disparities, access to quality education, and innovative teaching methods. Their work informs policies and practices that promote equal educational opportunities for all.
5. **Social Justice and Inclusion**: SRU's commitment to social justice drives research on inclusivity, diversity, and human rights. Researchers explore ways to foster a more just and equitable society, addressing discrimination and marginalization.
6. **Community Resilience**: SRU investigates community resilience in the face of natural disasters, economic challenges, and social upheavals. Their research informs strategies to build resilient communities that can withstand adversity.

SRU's guiding philosophy emphasizes impact—measuring success by the extent to which research endeavors positively affect lives in communities.

RATIONALE FOR THE MASTER OF RESEARCH (MRES)

The Master of Research (MRes) program at Springfield Research University is intentionally designed to address critical challenges across various disciplines. Rooted in academic excellence, it equips students with essential research skills, ethical foundations, and the ability to contribute meaningfully to their respective fields. By emphasizing cutting-edge research and societal impact, our graduates become competent professionals who drive innovation and advance knowledge.

1. **National Relevance (Eswatini):**
    - **Interdisciplinary Approach:** The MRes program recognizes the interconnectedness of disciplines within Eswatini. It prepares students to tackle complex problems by integrating insights from diverse fields.
    - **Research Competence:** Through rigorous training, MRes graduates acquire advanced research skills, enabling them to conduct independent investigations and contribute to knowledge creation.
    - **Ethical Inquiry:** Ethical considerations are woven into the fabric of the program, fostering responsible research practices.
2. **Regional Relevance (SADC):**
    - **Harmonization of Research:** SADC member states face common challenges. The MRes program aligns with SADC's goal of harmonizing research frameworks across borders, promoting regional cooperation, and addressing cross-border issues.
    - **Human Capital Development:** MRes graduates play a pivotal role in regional integration. They contribute to building a skilled workforce that can navigate complex regional issues.
    - **Promoting Well-Being:** SADC's stability relies on informed decision-making. MRes graduates contribute to maintaining order, resolving disparities, and promoting regional well-being.

3. **Purpose of the MRes Program:**
    - **Scholarly Exploration:** The MRes program encourages intellectual curiosity. Students engage in original research, exploring topics that span disciplinary boundaries.
    - **Innovation and Collaboration:** Graduates emerge as innovators, capable of collaborating across disciplines to address real-world challenges.
    - **Impactful Contributions:** Whether through academic research, industry partnerships, or community engagement, MRes graduates make meaningful contributions to society.

MRES PROGRAM LEARNING OBJECTIVES

The **Master of Research (MRes)** program's learning objectives:

1. **Broad-Based Knowledge:**
    - **Specialized Mastery:** Students will acquire an in-depth understanding of specialized areas relevant to their research interests. This includes theories, models, and intervention methods specific to their chosen field. Whether it's epidemiology, computer science, or social sciences, the MRes program ensures a comprehensive grasp of foundational knowledge.
2. **Research Methodology and Statistics:**
    - **Quantitative and Qualitative Skills:** The MRes program emphasizes research methodology, equipping students with both quantitative and qualitative tools. They'll learn how to design rigorous studies, collect and analyze data, and draw meaningful conclusions. Whether it's conducting surveys, experiments, or case studies, students gain proficiency in diverse research approaches.
    - **Advanced Statistical Techniques:** Students delve into advanced statistical methods, including regression analysis, multivariate techniques, and data visualization. These skills empower them to critically evaluate existing research and contribute novel insights.
3. **Original Contributions to Scientific Knowledge:**
    - **Intellectual Independence:** The MRes program fosters intellectual autonomy. Students engage in original research projects, identifying gaps in existing knowledge and proposing innovative solutions. Whether it's uncovering new patterns in climate data, developing novel algorithms, or exploring sociocultural phenomena, they contribute to the scientific discourse.
    - **Thesis or Dissertation:** The pinnacle of their MRes journey is the thesis or dissertation. Here, students demonstrate their ability to formulate research questions, conduct systematic investigations, and present novel findings. Rigorous peer review ensures the quality and impact of their contributions.
4. **Productive Research Career:**
    - **Publication and Dissemination:** MRes graduates actively participate in scholarly dissemination. They publish research articles in peer-reviewed journals, sharing their discoveries with the global academic community. Whether it's a groundbreaking algorithm, a policy recommendation, or a sociological theory, their work contributes to the collective knowledge base.
    - **Grant Writing and Funding:** The program equips students with grant-writing skills. They learn how to articulate research proposals, secure funding, and manage research projects. Whether it's government grants, industry sponsorships, or philanthropic support, MRes graduates navigate the competitive landscape of research funding.
5. **Effective Teaching and Educational Impact:**

- **Pedagogical Competence:** MRes graduates are prepared to teach. They understand instructional design, classroom management, and assessment strategies. Whether it's leading undergraduate seminars, mentoring junior researchers, or facilitating workshops, they contribute to educational excellence.
- **Mentoring Future Researchers:** Beyond formal teaching, MRes graduates mentor aspiring researchers. They guide undergraduate students, instilling research ethics, critical thinking, and a passion for inquiry. Their impact extends beyond their own work, shaping the next generation of scholars.

In summary, the MRes program cultivates not only research expertise but also the ability to communicate findings, mentor others, and drive positive change

LEARNING OUTCOMES FOR MRES PROGRAMS

All Disciplines

The **Master of Research (MRes)** programs across all disciplines:

1. **Critical Application of Theories and Methodologies:**
   - Graduates will demonstrate the ability to critically apply theories, methodologies, and specialized knowledge to address fundamental questions within their primary area of study. Whether it's unraveling the mysteries of quantum mechanics, analyzing historical trends, or exploring neural networks, they engage in rigorous intellectual inquiry.
2. **Significant Research and Intellectual Independence:**
   - Students will pursue research of significance. Under the guidance of advisors, they plan and conduct original investigations or implement interdisciplinary and creative projects. This process fosters intellectual independence—the hallmark of true scholarship. Whether it's designing experiments, composing music, or analyzing social phenomena, they contribute to the scholarly landscape.
3. **Effective Communication and Grant Preparation:**
   - Graduates will demonstrate strong oral and written communication skills. They can articulate their research findings, present at conferences, and publish in academic journals. Additionally, they'll be adept at preparing grant proposals, securing funding for their research endeavors.
4. **Ethical Practice:**
   - Upholding ethical principles is paramount. MRes graduates adhere to ethical guidelines within their field and the broader academic community. Whether it's informed consent in medical research, data privacy in computer science, or journalistic integrity, they embody ethical conduct.
5. **Value through Service:**
   - Graduates demonstrate the value of their discipline beyond academia. Through service, they contribute to the academy and the community. Whether it's organizing outreach programs, collaborating with local organizations, or advocating for policy change, they make a positive impact.
6. **Teaching Competence and Assessment:**
   - MRes graduates achieve mastery in skills and knowledge necessary for college and university undergraduate teaching. They can effectively convey complex concepts, design engaging courses, and assess student learning. Whether it's teaching calculus, programming, or literature, they inspire the next generation of learners.
7. **Productive Interactions and Leadership:**

- Graduates interact productively with diverse individuals. As leaders or team members, they exhibit integrity and professionalism. Whether it's collaborating on research projects, mentoring junior colleagues, or fostering inclusive environments, they contribute to a vibrant academic ecosystem.

MRES/MPHIL CAREER OPPORTUNITIES

Our graduates are ready to take on leadership roles within academia and significant research institutes and to tackle that most significant business and social problems we face in areas such as occupational health and safety, psychology, epidemiology, renewable energy, smart cities, social work, mental health, cybersecurity, judicial science and law, learning science and technology, forest science, computer science and engineering, mental health, workplace diversity, global health, and youth unemployment.

MRes/MPhil ENTRY REQUIREMENTS

The MRes/MPhil program requires a minimum of Bachelor's degree.

INDIVIDUALIZED COURSE OF STUDY

Students prepare an Individualized Course Study Plan (ISP) with their faculty mentor in the spring of the first year that is approved by the MRes committee. It details classes and tutorials that each student will take.

Duration of the MRes Programme

At Springfield Research University, we recognize the diverse needs of our students. Our Master of Research (MRes) program offers flexible timelines to accommodate different learning paces. For full-time students, the average duration is approximately 2 to 3 years, allowing for intensive research and engagement. However, we understand that life circumstances vary, and some students may choose a part-time route. Part-time MRes students typically complete their program in 4 to 5 years, providing a more gradual and manageable pace. We ensure that both full-time and part-time students have the necessary support and resources to successfully complete their MRes within realistic timeframes. Our commitment to excellence remains unwavering, regardless of the chosen pathway.

Guiding Regulations

The regulations governing SRU's MRes programs are covered by Ordinance 13 for the Degree of Master of Research and Ordinance 14 for Master of Research. These ordinances provide the framework for academic rigor, research standards, and program requirements, ensuring that our students receive a comprehensive and high-quality MRes education.

At SRU, our Master of Research (MRes) program adheres to a rigorous framework that includes essential components. First, students are required to submit a comprehensive research proposal, outlining their intended study. This proposal serves as the foundation for their research journey. Second, the culmination of their research efforts is the MRes thesis—a substantial document that presents original findings, critical analysis, and scholarly contributions. Finally, the viva voce (oral defense) provides an opportunity for students to defend their thesis before an expert panel. These components, enshrined in the Ordinances, ensure that our MRes candidates engage in robust research, contribute to knowledge, and demonstrate mastery in their chosen field.

The regulations governing SRU's Master of Research programs include provisions for external examiner oversight. These independent experts evaluate theses, research proposals, and viva voce examinations to ensure consistency, fairness, and academic rigor. Their feedback enhances quality assurance, upholds standards, and contributes valuable insights for continuous program improvement.

Guidelines, Procedures & Processes for Submission of Research Proposal by Students

Here are the clear guidelines, processes, and procedures that students at Springfield Research University (SRU) will follow when submitting their research proposals for the MRes program:

1. **Proposal Preparation:**
    - Topic Selection: Students choose a research topic aligned with their interests and the program's focus areas.
    - Literature Review: A thorough review of existing literature helps students identify gaps, research questions, and relevant theories.
    - Problem Statement: Clearly define the research problem or gap the proposal aims to address.
2. **Proposal Components:**
    - Title: A concise and descriptive title for the proposed research.
    - Abstract: A brief summary highlighting the research objectives, methodology, and expected outcomes.
    - Introduction: Contextualize the research, state the problem, and provide background information.
    - Research Questions/Hypotheses: Clearly articulate the questions or hypotheses driving the study.
    - Methodology: Describe the research design, data collection methods, and analysis techniques.
    - Significance: Explain the importance of the research and its potential impact.
    - Timeline: Provide a realistic timeline for completing the research.
3. **Submission Process:**
    - Departmental Review: Students submit their proposals to their academic advisors or department heads.
    - Feedback and Revisions: Advisors provide feedback, and students revise their proposals accordingly.
    - Ethics Approval: If applicable, obtain ethical approval for research involving human subjects.
    - Final Submission: Once approved, students submit the final proposal to the Graduate Studies Office.
4. **Evaluation Criteria:**
    - Originality: Assess the novelty and uniqueness of the proposed research.
    - Feasibility: Evaluate whether the research can be realistically conducted within the proposed timeline.
    - Clarity: Ensure the proposal is well-written, organized, and free of ambiguity.
    - Alignment: Check if the proposal aligns with SRU's research priorities and program objectives.

5. **Support and Resources:**

    - Workshops and Seminars: Attend workshops on proposal writing, research methods, and academic integrity.
    - Library Resources: Utilize SRU's library for literature searches and citation management.
    - Peer Feedback: Seek input from peers and faculty members during the proposal development process.

Our goal is to foster rigorous, impactful research that contributes to both academia and the community.

The Master's Degree shall:

The Master's degree program in Research at Springfield Research University is designed to equip students with the skills and knowledge necessary for a successful career in this dynamic field. Here are the key features of our program:

1. **Duration**:
    - The program spans **two years** for full-time students or **four years** for part-time students.

Our program ensures a rigorous academic experience while allowing flexibility for part-time students. Students engage in hands-on learning, theoretical coursework, and practical projects, preparing them for the exciting challenges of the Research industry.

Special Departmental Regulations

1. **Course Completion Requirements**:
    - All **Core**, **Prerequisite**, **Required**, **General**, and **Elective** courses within the degree program are compulsory. Students must pass these courses with a minimum grade of **50%** to graduate.
    - However, during the third and fourth semesters, all courses must be passed with a minimum grade of **60%** (equivalent to a CGPA of **3.00**) to qualify for graduation.
2. **Optional Courses**:
    - Optional courses do not contribute to the final grade. Their marks are excluded from the computation of the overall grade.
3. **Externalization of Courses**:
    - All courses within the degree programs must be completed internally. Externalization is not permitted.
4. **Quality Control and Evaluation**:
    - Regular academic audits and reviews occur every two years, overseen by external moderators. Internal program evaluation is ongoing.
5. **Competence and Preparation**:

- The courses offered in the Master of Research program provide adequate competences, preparing students for professional practice at the required academic level.

6. **Core and Prerequisite Courses**:
    - Students must pass all Core and Prerequisite courses with a minimum grade of **50%** before progressing to the next level or enrolling in additional courses.

Degree Award and Classification

- Upon successful completion of all **Core**, **Required**, and **Education** courses, as well as meeting the program requirements, a student will be awarded the degree of **Master of Research** at the end of the final year.
- The **normal classification** of a Master of Research Degree is determined based on the academic performance during the third and fourth years of study.

Rationale to Course Numbering

At Springfield Research University, we meticulously design our Master of Research curriculum to empower students with the knowledge and skills needed to thrive in this dynamic field. Our course numbering system serves as a roadmap, guiding students through their academic journey - ****600-level courses**** introduce foundational concepts and build on those foundations. - ****700-level courses**** explore more specialized topics and are advanced and often include research or project components. Let's delve into the reasons behind our thoughtful approach:

1. **Logical Progression**: Our course numbers reflect a logical progression. Foundational concepts and deeper explorations in with the "600" series, followed by "700" levels covering advanced topics and research opportunities.
2. **Prerequisites and Coherence**: Clear numbering helps students understand prerequisites and co-requisites. For instance, a 600-level course assumes knowledge ensuring a coherent learning experience.
3. **Specialization and Depth**: As students advance, higher-level courses delve into specialized areas such as epidemiology and biostatistics, and health management. The numbering system communicates this depth of study.
4. **Alignment with Program Goals**: Each course number aligns with our program's learning outcomes. Whether it's mastering epidemiology or diving into biostatistics, students can track their progress.
5. **Transferability**: Consistent numbering facilitates credit transfer between institutions, supporting seamless academic mobility.

In summary, our course numbering isn't just a sequence—it's a deliberate framework that enhances learning, fosters curiosity, and prepares our students for impactful careers in Academia and Research. Master of Research simplifies the course numbering system.

600-Level Courses (Academia and Research Leadership and Management):

1. **RES 601:** Research Policy and Advocacy
2. **RES 610:** Epidemiology and Biostatistics
3. **RES 620:** Healthcare Administration and Ethics

700-Level Courses (Academia and Research Strategy and Innovation):

1. **RES 701:** Global Academia and Research Challenges and Solutions
2. **RES 710:** Environmental Academia and Research and Sustainability
3. **RES 720:** Research Informatics and Digital Health

The Master of Research is a two (2) program. The student is expected to accumulate 192 credit points to be considered to have met the requirements of the Master of Research and must pass each module by at least 50%.

- Level 1 = minimum of credits 96 (960 notional hours of study)
- Level 2 = minimum of credits 96 (960 notional hours of study)

TOTAL credit points 1920 (1920 notional hours of study)

Credit Transfer and Accumulation

1. Credits are derived from engagement of students in learning activities during lectures, seminars, tutorials, micro or macro field trips, directed and self-directed learning and writing examination tests and assignments.
2. Modules from the health and medical science faculty are worth 8 credit. Lecture attendance is compulsory. Students who attend less than 80% of lessons will not be allowed to sit for their sessional examinations.

Weighting

The degree class shall be based on weighting the results from part 1 and 2, the Degree weighting shall be as follows:

Level 1 50%

Level 2 50%

Distribution of Notional Hours

Module	Lecture Hrs	Tutorials/ Seminars	Self-Directed Study	Assignment Tests/Exams	Notional Hrs	Credits
RES700	36	10	17	17	80	8
PROJECT	0	0	40	40	80	8

Teaching Methods

At Springfield Research University (SRU), we are committed to employing a diverse array of teaching methods to ensure a comprehensive and engaging learning experience for our students. Our teaching methods are carefully selected to align with the programme's objectives and to meet the needs of our diverse student body. The following are the key teaching methods utilized across all SRU programmes:

1. Lectures:

- Lectures are used to introduce and explain key concepts, theories, and principles. They provide a structured and systematic approach to delivering content, allowing students to gain a solid foundation in their respective fields. Lectures are often supplemented with visual aids, multimedia presentations, and interactive elements to enhance understanding and engagement.

2. Seminars:

- Seminars are interactive sessions that promote critical thinking and in-depth discussion on specific topics. Students are encouraged to actively participate, share their perspectives, and engage in debates. Seminars provide an opportunity for students to develop their analytical and communication skills.

3. Workshops:

- Workshops are hands-on sessions that focus on practical skills and applications. These sessions allow students to engage in experiential learning, apply theoretical knowledge to real-world scenarios, and collaborate with peers on projects and activities. Workshops are designed to foster creativity, problem-solving, and teamwork.

4. Problem-Based Learning (PBL):

- Problem-Based Learning is a student-centered approach that involves presenting students with complex, real-world problems to solve. Students work in small groups to research, discuss, and propose solutions, developing critical thinking and collaborative skills in the process. PBL encourages independent learning and active engagement.

5. Case Studies:

- Case studies are used to analyze real-life situations and decision-making processes. Students examine and discuss case studies to understand the context, identify key issues, and evaluate possible solutions. This method helps students develop their analytical and problem-solving abilities while relating theoretical concepts to practical situations.

6. Clinical Practice:

- For programmes that include a clinical component, such as Health and Medical Sciences, clinical practice is an integral part of the curriculum. Students gain hands-on experience in clinical settings, working under the supervision of qualified professionals. This method provides valuable opportunities for students to apply their knowledge, develop clinical skills, and gain insights into professional practice.

7. Research Projects:

- Research projects are designed to cultivate a culture of inquiry and innovation. Students engage in independent or group research projects, exploring topics of

interest and contributing to the body of knowledge in their field. Research projects develop students' research skills, critical thinking, and ability to communicate findings effectively.

8. Online Learning:

- Online learning is incorporated to provide flexible and accessible education. SRU utilizes online platforms to deliver lectures, conduct discussions, and facilitate collaborative projects. Online learning allows students to access course materials, participate in virtual classrooms, and engage with peers and instructors remotely.

9. Continuous Assessment:

- Continuous assessment methods, such as quizzes, assignments, and presentations, are used to monitor students' progress and provide ongoing feedback. These assessments help identify areas for improvement and ensure that students are meeting learning objectives throughout the course.

10. Peer Learning:

- Peer learning encourages students to collaborate and learn from each other. Group projects, study groups, and peer review sessions provide opportunities for students to share knowledge, offer feedback, and support each other's learning journey.

At SRU, our commitment to employing diverse and effective teaching methods ensures that our students receive a well-rounded education that prepares them for success in their chosen fields. We continuously review and enhance our teaching practices to provide the best possible learning experience for our students.

Delivery Methods

At Springfield Research University (SRU), we utilize a variety of delivery methods to ensure that our educational programmes are accessible, engaging, and effective. Our delivery methods are designed to cater to the diverse needs of our students and to provide flexible learning opportunities. The following are the key delivery methods employed across all SRU programmes:

1. In-Person Delivery:

- **Classroom Lectures:** Traditional classroom lectures provide a structured and interactive environment where students can engage with instructors and peers. These sessions often include discussions, presentations, and multimedia resources to enhance learning.
- **Laboratory Sessions:** For programmes that require practical and experimental learning, laboratory sessions are conducted in specialized labs equipped with the necessary tools and equipment. These hands-on sessions allow students to apply theoretical knowledge in a controlled environment.
- **Clinical Placements:** Health and Medical Sciences programmes include clinical placements in hospitals, clinics, and healthcare facilities. These placements provide students with real-world experience under the supervision of qualified professionals.

2. Online Delivery:

- **Virtual Classrooms:** Online platforms are used to deliver lectures, conduct discussions, and facilitate collaborative projects. Virtual classrooms enable students to access course materials, participate in live sessions, and engage with peers and instructors from remote locations.
- **Recorded Lectures:** Recorded lectures are made available for students to access at their convenience. This flexible approach allows students to review and revisit course content as needed.
- **Online Assessments:** Online assessments, including quizzes, assignments, and exams, are conducted through secure online platforms. These assessments provide timely feedback and help monitor students' progress.

3. Blended Learning:

- **Hybrid Courses:** Blended learning combines in-person and online delivery methods to provide a flexible and comprehensive learning experience. Hybrid courses may involve alternating between classroom sessions and online activities.
- **Flipped Classroom:** In the flipped classroom model, students access instructional content online before class and use in-person sessions for interactive, application-based activities. This approach encourages active learning and deeper engagement with the material.

4. Independent Study:

- **Self-Paced Learning:** Self-paced learning allows students to progress through course materials at their own speed. This method is ideal for students who prefer to learn independently and manage their own schedules.
- **Research Projects:** Independent research projects provide students with the opportunity to explore topics of interest, develop research skills, and contribute to the body of knowledge in their field. Faculty advisors provide guidance and support throughout the research process.

5. Collaborative Learning:

- **Group Projects:** Group projects foster teamwork and collaboration among students. These projects often involve problem-solving, research, and presentations, allowing students to learn from each other and develop interpersonal skills.
- **Peer Review:** Peer review sessions encourage students to provide and receive constructive feedback on each other's work. This method promotes critical thinking, reflection, and improvement.

6. Experiential Learning:

- **Internships and Work Placements:** Internships and work placements provide students with practical experience in their chosen field. These opportunities allow students to apply their knowledge in real-world settings, develop professional skills, and build industry connections.
- **Field Trips and Excursions:** Field trips and excursions offer experiential learning opportunities outside the classroom. These activities provide students with firsthand exposure to relevant sites, industries, and practices.

7. Continuous Assessment:

- **Formative Assessments:** Formative assessments, such as quizzes, assignments, and in-class activities, provide ongoing feedback to students and help track their progress. These assessments are designed to support learning and identify areas for improvement.
- **Summative Assessments:** Summative assessments, including final exams, projects, and presentations, evaluate students' overall performance and mastery of course content.

At SRU, our diverse delivery methods ensure that students receive a well-rounded and flexible education that caters to their individual learning preferences. We are committed to continuously enhancing our delivery methods to provide the best possible learning experience for our students.

COURSE STRUCTURE AND SYNOPSIS

Year I Semester 1 and 2

Our university is committed to fostering a robust research environment through comprehensive capacity development workshops designed for Master of Research (MRes) students. These workshops, delivered in diverse formats such as face-to-face sessions, webinars, and online modules, aim to equip our students with essential skills and knowledge for their academic and research careers.

Code	Course	Seminar	Research	Credits
RES601	Research Philosophy, Ethics & Methods	10	70	**8**
RES602	Descriptive Statistics	10	70	**8**
RES603	Academic Communication Skills	10	70	**8**
RES604	Special Topics	10	170	**18**
RES705	Qualitative Social Research Methods	10	70	**8**
RES706	Computer Science for Researchers	10	70	**8**
RES708	Special Topics	10	170	**16**
TOTAL				**82**

Year 2 Semester 3 and 4 – Specialisations

ENGINEERING AND TECHNOLOGY SPECIALISATION

A candidate pursuing a Master of Research (MRes) in Engineering and Technology has the opportunity to specialize in one of the following areas for their research and thesis:

Specialization	Publication	Thesis	Credits
Nanotechnology	100	860	96
Cybersecurity/Blockchain Technology	100	860	96
Artificial Intelligence/Quantum Computing	100	860	96
Robotics/Mechatronics	100	860	96
Computer Science and Engineering	100	860	96
Electronics and Electrical Engineering	100	860	96
Aerospace Engineering	100	860	96
Manufacturing Engineering	100	860	96
Speech and Hearing Bioscience and Technology	100	860	96
Architectural Engineering	100	860	96

Mechanical Engineering	100	860	96
Renewable Energy/Smart Cities	100	860	96
Environmental Engineering/Irrigation Engineering	100	860	96
Biomedical Engineering	100	860	96
Material Science	100	860	96
Mining Automation and Robotics	100	860	96
Geomechanics and Rock Engineering	100	860	96
Geology/Metallurgy/Geotechnical Engineering	100	860	96

SCIENCE AND MEDICAL SCIENCES SPECIALISATION

A candidate pursuing a Master of Research (MRes) in Science and Medical Sciences has the opportunity to specialize in one of the following areas for their research and thesis:

Specialization	**Publication**	**Thesis**	**Credits**
Astronomy	100	860	96
Climate Change and Global Warming	100	860	96
Forest Science/Soil Science	100	860	96
Earth and Planetary Science	100	860	96
Environmental Science/Consumer Science	100	860	96
Particles and Nuclear Physics/Physics	100	860	96
Tropical Veterinary Science/Veterinary Science	100	860	96
Public Health/Reproductive Health Sciences	100	860	96
Genomics and Precision Medicine	100	860	96
Marine Environment and Sustainable Development	100	860	96
Epidemiology	100	860	96
Cardiology/Cardiothoracic Medicine	100	860	96
Occupational Health and Safety	100	860	96
Pharmaceutical Medicine	100	860	96
Immunology/Microbiology	100	860	96
Global Health Delivery	100	860	96
Neuroscience/Neurology/Neurocritical Care	100	860	96
Orthopedic Medicine/Surgery	100	860	96
Biomedical Science	100	860	96
Regenerative Medicine and Entrepreneurship	100	860	96
Pediatric Nursing	100	860	96
Medicine (Research) MD (Res)/Family Medicine	100	860	96
Psychiatry/Clinical Psychology/Mental Health	100	860	96
Clinical Dentistry	100	860	96
Molecular Biology and Biotechnology	100	860	96
Physiotherapy, Occupational Therapy & Rehabilitation	100	860	96

BUSINESS MANAGEMENT AND ECONOMICS SPECIALISATION

A candidate pursuing a Master of Research (MRes) in Business Management and Economics has the opportunity to specialize in one of the following areas for their research and thesis:

Specialization	**Publication**	**Thesis**	**Credits**
Business Administration	100	860	96
Financial Engineering/	100	860	96

Audit and Risk Management	100	860	96
Health Policy and Management	100	860	96
Economics/Econometrics	100	860	96
Management Information Systems	100	860	96
Data Analytics/Big Data Analytics	100	860	96
Digital Marketing and Media/Marketing Management	100	860	96
Operations Research	100	860	96
Human Resources Management	100	860	96
Digital Transformation Management	100	860	96
Project Management	100	860	96
International Business Management	100	860	96
Supply Chain Management and Logistics	100	860	96
Actuarial Science	100	860	96
Innovative Entrepreneurship	100	860	96
FinTech and Emerging Financial Systems	100	860	96

EDUCATION AND LEARNING SCIENCE SPECIALISATION

A candidate pursuing a Master of Research (MRes) in Education and Learning Science has the opportunity to specialize in one of the following areas for their research and thesis:

Specialization	Publication	Thesis	Credits
Learning Science and Technology	100	860	96
Inclusive Education	100	860	96
Special Needs Education	100	860	96
Physical Sciences/Physics	100	860	96
Biological Sciences/Chemistry	100	860	96
Computer Science Education	100	860	96
Medical Education	100	860	96
Policy and Management	100	860	96
Mathematics/Home Economics	100	860	96
Educational Technology	100	860	96
Language Education	100	860	96
Curriculum and Instruction	100	860	96
Higher Education Administration	100	860	96
Educational Psychology/Sports Psychology	100	860	96
Education Research	100	860	96
Early Childhood Development	100	860	96

ARTS, POLITICAL SCIENCE AND LAW SPECIALISATION

A candidate pursuing a Master of Research (MRes) in Arts, Political Science and Law has the opportunity to specialize in one of the following areas for their research and thesis:

Specialization	Publication	Thesis	Credits
Judicial Science/Laws	100	860	96
Social Work/Alternative Dispute Resolution	100	860	96
Society and Culture/Social Justice	100	860	96
Psychology/Political Science	100	860	96
Homeland Security/Cybersecurity Law	100	860	96

International Relations and Diplomacy	100	860	96
Governance, Peace Building and Leadership	100	860	96
Banking and Finance Law/Construction Law	100	860	96
Energy and Climate Change Law/Animal Law	100	860	96
Intellectual Property Law/Mining Law and Policy	100	860	96
Tourism Management	100	860	96

Course Descriptions

INTRODUCTION TO RESEARCH

This course will provide an opportunity for participants to establish or advance their understanding of research through critical exploration of research language, ethics, and approaches. The course introduces the language of research, ethical principles and challenges, and the elements of the research process within quantitative, qualitative, and mixed methods approaches. Participants will use these theoretical underpinnings to begin to critically review literature relevant to their field or interests and determine how research findings are useful in forming their understanding of their work, social, local and global environment.

DESCRIPTIVE STATISTICS

This course targets an introduction to the ideas, techniques and applications of statistics and probability. The emphasis is on applying statistics to problems, selecting sensible techniques, following the methodology and interpreting the results. Understanding the concepts and computer-based solutions are emphasised and applications to commerce, the social sciences, the humanities, science and engineering are considered. Particular topics include data analysis, summary statistics, probability, statistical distributions, estimation and inference (including confidence intervals, hypothesis tests and modelling).

ACADEMIC COMMUNICATION SKILLS

In this course students will practice analytical reading, writing, and thinking intensively, through a variety of exercises and assignments. Emphasis is placed on using various methods of organization appropriate to the writer's purpose and audience. Students will read and discuss a selection of non-fiction texts; these readings will form the basis for writing assignments in summary, critique, synthesis, and persuasion. The course also stresses the ability to understand, use, and document college-level non-fiction readings as evidence for effectively formulating and accurately supporting a thesis. This course is for international students who have already studied grammar extensively and need to refine the ability to produce acceptable academic English.

QUANTITATIVE SOCIAL RESEARCH METHODS

Examines and implements advanced techniques in quantitative methodology as it applies to the social sciences. Univariate and introductory multivariate techniques through computerized statistical packages in the social and behavioral sciences and entailing statistical problem solving using various data-sources.

COMPUTER SCIENCE FOR RESEARCHERS

This course, using both lecture and laboratory practice, introduces students to basic computer concepts in hardware, software, networking, computer security, programming, database, e-commerce, decision support systems, and other emerging technologies such as blogs, wiki, RSS, podcasting, and Google applications. The course will deal with computer applications for researchers and statistics. Additional lectures examine social, legal, ethical issues including privacy, intellectual property, health concerns, green computing, and accessibility. Students learn techniques to search, evaluate, validate, and cite information found online. Widely used applications including ssps, word processing, spreadsheets, databases, presentation, and web development software are studied.

RESEARCH METHODS IN WRITING

This course provides an introduction to research methodologies in composition/rhetoric and literacy studies. One of the challenges of writing research is understanding its moving parts—what these are, how they interact, and how they evolve over time. Therefore, the course is structured as one pass at designing a research project: beginning with problems and questions; moving through design, collection, and analysis; and ending with writing and reflection. Along the way, we will read a wide array of approaches to research, and hear from several guest speakers on these topics, in pursuit of the following goals: identify the pressing issues, questions, and debates that motivate research on writing; become familiar with a range of methodological options in the fields of rhetoric, composition, and literacy (visiting some others as well); strengthen your ability to evaluate research and identify areas of intervention; engage in the kinds of thinking and inquiry activities required for qualitative research and question and critically reflect on what it means to conduct research on writing.

RESEARCH PHILOSOPHY

This course is concerned with the nature of social science inquiry. It is intended for students in all disciplines and those early in their masters and doctoral research programmes. The course travels through philosophy of science, epistemology, ontology and specific applications to the major disciplinary areas. The main objectives of the course are to: (a) introduce the philosophy of science and its application to social sciences, (b) outline major differing classes of theory in social sciences and to explicate their metatheoretical foundations, (c) familiarize students with the plurality of views on these issues in the intellectual community, (d) provide students with an opportunity to apply these concepts to the analysis of issues in social sciences, and (e) provide students with an opportunity to practise scholarly discourses.

TECHNICAL WRITING.

Technical writing combines technical knowledge with writing skills to communicate technology to the world. This course introduces the fundamental principles of technical communication, and the tools commonly used in the technical writing profession. Topics include user and task analysis, information design, instructional writing, and usability testing. Students learn to use the technical writing process to create user-centered documents that combine text, graphics, and visual formatting to meet specific information needs. Students create a portfolio of both hardcopy and online documentation, using professional tools such as FrameMaker, Acrobat, and RoboHelp.

QUALITATIVE SOCIAL RESEARCH METHODS

Interviews, observation, focus group methods examined in relation to research endeavours in criminal justice, political science and public policy and administration. Other topics include communication skills in terms of writing, presentation, interpersonal dialogue, and group process. Students develop skills in qualitative inquiry and the application of methods, such as advanced interviewing skills, Delphi methods, and qualitative content analysis. Students also apply qualitative analysis software such as nVivo. Other topics include communication skills in terms of writing, presentation, interpersonal dialogue, and group process.

MULTIPLE REGRESSION FOR RESEARCH

This course introduces simple and multiple linear regression models. These models allow you to assess the relationship between variables in a data set and a continuous response variable. Is there a relationship between the physical attractiveness of a professor and their student evaluation scores? Can we predict the test score for a child based on certain characteristics of his or her mother? In this course, you will learn the fundamental theory behind linear regression and, through data examples, learn to fit, examine, and utilize regression models to examine relationships between multiple variables, using the free statistical software R and RStudio.

PHILOSOPHY OF SCIENCE AND RESEARCH ETHICS

This introductory course in philosophy of science will provide the student with a good basis for a better understanding of issues concerning research ethics and social responsibility of science by viewing science as a practice form and by examining its own ethical aim ("good" science). Among issues to be discussed are: The value- and norm systems of science, facts and values, political-economical interests and scientific integrity, research ethical guidelines, duties towards other scientists and research objects, science, technology and society, ethical challenges in developmental research, science and pseudo-science, scientific rationality and scientific methods, scientific realism and social constructivism, metaphors and theory formation, theoretical experience/experimental experience. The student shall gain an increased understanding of science in practice, i.e., science as it is carried out in diverse ways within the natural, social and cultural field. The student shall develop increased knowledge of what is characteristic of scientific practice, of rationality and methods within different fields, of the aims of science, and of how science is influenced by society, and of what kind of social and cultural consequences it has. The student shall develop skills for identifying philosophical/ethical problems within one's own and others' research field. The student shall build competence for general critical reflection on science and ethical competence for handling certain aspects of scientific work.

ADVANCED MULTIVARIATE STATISTICS

This course covers advanced-level multivariate statistical methods, including an overview of the general linear model, assumptions of multivariate statistical procedures, MANOVA and MANCOVA, discriminant function analysis, canonical correlation analysis, cluster analysis, and principal components analysis. The focus of this course will be on conceptual understanding and computer applications, with an introduction to the mathematical underpinnings of the procedures examined.

ASTRONOMY

Astronomy provides a quantitative introduction to the physics of the solar system, stars, the interstellar medium, the galaxy, and the universe, as determined from a variety of astronomical observations and models. Topics include: planets, planet formation; stars, the Sun, "normal" stars, star formation; stellar evolution, supernovae, compact objects (white dwarfs, neutron stars, and black holes), plusars, binary X-ray sources; star clusters, globular and open clusters; interstellar medium, gas, dust, magnetic fields, cosmic rays; distance ladder; galaxies, normal and active galaxies, jets; gravitational lensing; large scaling structure; Newtonian cosmology, dynamical expansion and thermal history of the Universe; cosmic microwave background radiation; big-bang nucleosynthesis. No prior knowledge of astronomy is necessary.

PARTICLES AND NUCLEAR PHYSICS

The course covers nuclear and particle physics, from the universe´s elementary particles and the forces that act between them, to the quantum structure of systems composed of elementary particles. Weight is given to current challenges and new results from cutting-edge research. The learning outcomes are: apply fundamental conservation laws and symmetries to judge the viability of production and decay processes for nuclei and elementary particles; have insight into the interplay between theory, models, and data from modern experiments and into how the major open questions are being addressed; have understanding of nuclear properties and models that describe the quantum structure, decay, and reactions of nuclei.; have knowledge about the Standard Model of elementary particles and interactions (including the role of the Higgs boson).; have knowledge about the quark-gluon plasma (the universe´s matter content and state right after the Big Bang) and know about the roles of nuclear and particle physics in energy production, medicine, and astrophysics - for example how to search for dark matter and how to understand the origin of the elements in the universe.

NANOTECHNOLOGY

The course teaches about the studies of manipulating matter on an atomic and molecular scale and focuses on the structures sized between 1-100 nanometers in at least one direction. Research under this field are conducted to produce nanomaterials which can be measured as a thousand times smaller than the diameter of human hair. The students need to know the various technical aspects and its application in different fields. The students can specialize in the following areas like Medicine, Environment, Agriculture, Biotechnology, Food and Beverage, Teaching, Space Research, and much more.

CYBERSECURITY

Cybersecurity has become instrumental to economic activity and human rights alike. But as digital technologies penetrate deeply into almost every aspect of human experience, a broad range of social-political-economic-legal-ethical-military and other considerations have come to envelop the cybersecurity landscape. Cybersecurity in Context will explore the most important elements that shape the playing field on which cybersecurity problems emerge and are managed. The course will emphasize how ethical, legal, and economic frameworks enable and constrain security technologies and policies. It will introduce some of the most important

macro-elements (such as national security considerations and the interests of nation-states) and micro-elements (such as behavioral economic insights into how people understand and interact with security features). Specific topics include policymaking (on the national, international, and organizational level), business models, legal frameworks (including duties of security, privacy issues, law enforcement access issues, computer hacking, and economic/military espionage), standards making, and the roles of users, government, and industry.

ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) is behind smart phone's intelligent personal assistant, driverless cars, robots, government fraud detection systems, and the image recognition algorithms of Facebook and Instagram, just to mention a few examples. This course introduces students to core techniques and applications of Artificial Intelligence using primarily symbolic methods in an agent-oriented paradigm. During the course, students will implement advanced search-based agents solving transportation tasks in a virtual environment. The virtual environment is an idealized model of systems of delivery robots in hospitals, the warehouse robots at Amazon, etc. This part of the course is referred to as the programming project. The course consists of the following parts: Introduction to AI (foundations of AI + intelligent agents), the philosophy, ethics and future of AI, problem-solving by searching: uninformed and informed search, lab work on the programming project, learning: Neural networks and reinforcement learning, game playing and adversarial search, lab work on AI in board games, etc.

ROBOTICS

This course is a hands-on advanced that gives key concepts of robotics. Each student will use a small mobile robot to learn about sensors, computation, digital communications, and embedded software design. The course will have four take-home labs using this robot platform. The curriculum covers basic robotics, and hands-on lab activities. Topics include: robots of yesteryear, sensors and pose, actuators, feedback control, braitenberg vehicles, FSMs, behavior-based control, communications, consensus and agreement, distributed algorithms, coverage control, multi-threaded programming and state estimation. The purpose of this class is to build on the students' basic robotic knowledge, to include robot vision systems, robot safety zones and interlocks, and advanced programming. This will all culminate with a capstone project that will incorporate electrical, mechanical, fluid power, robotic, and PLC systems. (Su).

CLIMATE CHANGE AND GLOBAL WARMING

Provides a scientific background to climate change. Emphasizes current global warming using examples of climate change from the geological record. Considers the impact of global warming together with policies and practices that address issues of global warming. By the end of this course students will be able to: to use scientific concepts to explain climate change in a series of discussion and reflections, to use the current climate to interpret how climate has changed in the past through comparison essays, to connect science with policy and decision making regarding global warming by preparing a report for a town hall and to recognize the critical roles of social responsibility and governance in addressing global climate change reviews of climate action citizens. These student learning outcomes connect with the following learning objectives: be conversant in theoretical concepts of the physical sciences

and their application to understanding and studying the environment; develop a basic understanding of humanities and social sciences, and the interdisciplinary connections between these subjects and the natural sciences, to understand and solve environmental issues; develop advanced scientific skills necessary to achieve an understanding of, and solutions to, environmental problems including physical and biological measurement techniques, statistical data analysis, hypothesis formulation and conceptual modeling, research project design and working collaboratively; exhibit the ability to interpret and communicate information related to environmental issues in written and oral forms appropriate to both scientific and non-technical audiences; demonstrate the ability to apply interdisciplinary training to environmental problems of local, regional, national, or global significance; understand the role of individuals and participate in the creation of solutions for environmental problems; and participate in engaged inquiry as a means of connecting classroom learning to real-world environmental problem solving and establishing the skills needed for life-long learning.

JUDICIAL SCIENCE/LAWS

This course is designed to increase the understanding of the criminal judicial processes. It includes a study of the functioning of courts, judges, lawyers and law enforcement agencies, including judicial decision-making and the impact of court decisions. The student will be able to: Explain the terminology associated with the criminal judicial process and how those terms can be used in analyzing real and hypothetical cases, list the significant steps in the criminal justice process, compare the variations among the federal and state systems, identify the institutional representatives involved in each step of the criminal process, evaluate the factors influencing the decision makers and participants in the criminal justice process, discuss current and future challenges to the administration of justice and integrate biblical principles into the assessment of criminal justice processes.

LEARNING SCIENCE AND TECHNOLOGY

Learning is a complex process that involves the brain, personal history, entire body, and environment. The learning sciences can help understand how people learn, what people can do to improve learning, and why some instructional strategies work better than others. This course provides an understanding to the learning sciences for educators and educational technologists and instructional specialists. The primary intent of the course is to help educators use the learning sciences to make learning more effective, efficient, and inclusive, both with and without educational technology. The course begins with an overview of the learning process and then delves into critical aspects of learning such as motivation, depth of processing, instructional material design, formative assessment, and feedback.

BUSINESS ADMINISTRATION

Business Administration program for those who want to combine academic rigor and managerial relevance with the flexibility to apply a broad range of disciplines and research methods to their chosen area of study. The purpose of the doctoral program is to train business executives in the field of management providing them with the proficiencies to pursue academic, business and public administration careers that require research skills and qualifications. The objective of the doctoral program is therefore to provide participants with the skills and knowledge required to do independent high quality research. Business everywhere has become global in nature. The global business environment has become highly

turbulent and complex due to extraordinary changes in the fields of information, technology, competition, economics, politics and society. The constantly changing business environment renders the current management models or approaches obsolete very fast. Business executives are required to continually adjust their management approaches and be innovative and creative in managing the turbulent business environment, and the uncertainties, complexities and ambiguities arising out of it. They need to understand how to generate innovative management ideas which require knowledge of advances in management theories and ability to investigate or research complex management issues for better solutions.

FINANCIAL ENGINEERING

Financial engineering is a broad, multidisciplinary field of study and practice that, essentially, uses engineering approaches and methodologies to study and practice finance. It integrates and utilizes information from various fields, including economics, mathematics, computer science, and financial theory. It combines scientific theories from financial economics, mathematics, statistics, physics, and econometrics with methods and tools from engineering and computer science to solve the problems of investment finance. An important part of financial engineering consists of putting financial theories into practice in the financial world. Excellent background in mathematics has an excellent chance of helping you make a successful career in this field at large investment banks and other financial institutions. With the effort and professionalism involved in this profession, one is rewarded with recognition and wealth. The field of Financial Engineering has a huge significance. Some of the areas of the importance of the course are: helps us reduce risk in investments by assessing the total risk of a portfolio, assist in making markets more efficient by matching the needs and wants, provide financial analysis of the company's product and assets, aids in advancing the company's corporate strategy, and creates real-time economic simulations to predict the future behavior of the market.

HOMELAND SECURITY

This course will examine the evolution of Homeland Security as a concept, a legal framework, a redirection of national policies and priorities and also the actual implementation and creation of the Department of Homeland Security. The course provides an overview of the history of terrorist threats and governments responses and an introduction to the fundamental policy legislation and documents, such as national security strategies, homeland security directives, the National Response Framework (NRF), and National Incident Management System (NIMS). The purpose of this course is to analyze core policy, procedures, and legislation which create and build upon the foundation of homeland security. The student will be able to: assess the interconnections and complexities among homeland security and emergency management policy, laws, and regulations, and between them and the various stakeholders involved in the field, evaluate the essential elements of core homeland security policies and programs including legal authority, political will, technical ability, and for efficiency and effectiveness, critique the types of policies and programs available specific to and relating to all hazards, including the linkages between federal, state, and local programs and integrate Christian Worldview principles into professional decision-making processes involving the administration and management of homeland security programs and organizations.

DIPLOMACY AND INTERNATIONAL RELATIONS

Foreign Service and Diplomacy provides the opportunity for candidates to investigate how countries work with or against foreign powers. The course includes law, history, relationships with other countries, diplomacy as a career, and international relations associated with the diplomatic environment. This course provides an understanding to the causes of international conflict and cooperation. Topics include war initiation, crisis bargaining, international terrorism, nuclear strategy, interstate economic relations, economic growth, international law, human rights, and environmental politics. *The o*bjectives of the course are: analyze and understand the major themes of international relations and global politics, develop an appreciation of theory and its utility in the study and practice of International Relations, improve critical thinking and writing skills, demonstrate the ability to describe the social, political, and economic forces that influence social behavior and the global system and use knowledge of international affairs in a practical problem-solving way to address issues of immediate international concern.

FOREST SCIENCE

The course covers the areas of research for the students include silvi-culture, seed technology, agro-forestry, tree physiology, tree genetics, tree breeding, tree tissue culture, forest management, wood science, wildlife, etc. Forestry is the art and science of tree resources, including plantations and natural stands. The main goal of forestry is to create and implement systems that allow forests to continue a sustainable provision of environmental supplies and services. The candidate has an opportunity of specialisation in three disciplines of forestry viz., Silvi-culture and Agro-forestry, Tree Physiology and Breeding and Wildlife Science.

EARTH AND PLANETARY SCIENCE

A science-based course on the most significant eruptions Earth has produced. Most eruptions discussed will be from within historic time and will involve information from geology (volcanology), geography, archaeology, history, art, and paleoenvironmental records such as tree-rings and ice-cores. After a two-class introduction to volcanoes, volcanic activity, and volcanology, and the hazards vs benefits of eruptions, each class will feature one of more eruptions of different types from around the world. A science-based interpretation of the eruptions and effects on human-kind and the environment, will be presented. Class participants will learn about one type of natural hazard, its causes, and the variability of volcanism on Earth. A tour of the mysteries and inner workings of our solar system. What are planets made of? Why do they orbit the sun the way they do? How do planets form, and what are they made of? Why do some bizarre moons have oceans, volcanoes, and ice floes? What makes the Earth hospitable for life? Is the Earth a common type of planet or some cosmic quirk? This course will introduce basic physics, chemistry, and math to understand planets, moons, rings, comets, asteroids, atmospheres, and oceans. Understanding other worlds will help us save our own planet and help us understand our place in the universe. Introduction to earthquakes, their causes and effects. General discussion of basic principles and methods of seismology and geological tectonics, distribution of earthquakes in space and time, effects of earthquakes, and earthquake hazard and risk, with particular emphasis on the situation etc.

HEALTH POLICY AND MANAGEMENT

This course is designed to familiarize students with concepts and ideas concerning the distribution of health and illness in society, the organization of the health care system, and the relationship of one to the other. The course considers the evolution of the health care systems and of health policy, present an international perspective on health care systems with an emphasis on the Affordable Care Act, alternative government roles, current challenges and the future of the health care systems. Explore divergent perspectives for analyzing health and health care: clinical, epidemiological, economic, sociological/cultural and public health. Focus on, selected issues in HPAM: the challenge of mental health, variations in medical practice and the quality of care, health care rationing and access to care. Discussion of how practitioners in the field of HPAM should respond to the growing awareness of the social determinants of health and the growth of the medical-industrial complex for HPAM. Class readings cover major topics in the study of health and health care delivery: the organization and financing of health care systems; cost and access to health care; health policy challenges and the Affordable Care Act; the roles of government in health systems and policy; the epidemiology of health and medical care, economic and ethical issues related to health care rationing, the social determinants of health. Along with covering these subjects, we emphasize the value of understanding diverse disciplinary perspectives, the challenges of meeting the varied (and often conflicting) needs and motivations of health care system stakeholders, and the ways in which the health care systems differ from those of other wealthy nations.

SPEECH AND HEARING BIOSCIENCE AND TECHNOLOGY

Physiologic, neurologic, and acoustic aspects of human communication, theoretical framework for speech and hearing science, and principles of acoustics applied to speech language pathology across the lifespan. The objectives are: understand the nature of sound and the clinical application of the concepts presented, understand resonance and the clinical application of the concepts presented, understand the articulatory system and the clinical application with relation to speech intelligibility, develop their understanding of cleft palate and related disorders and clinical application of this material, understand the phonatory system and the related clinical application, understand the respiratory system with respect of anatomy and physiology and the clinical application of this information, develop their understanding of nervous system in relation to speech production and the clinical application of this material and understand models and theories related to communication.

COMPUTER SCIENCE AND ENGINEERING

Computer Science Engineering (CSE) is an academic programme that integrates the field of Computer Engineering and Computer Science. The course contains a plethora of topics but emphasises on the advancement of computer programming and networking. The topics covered in the course are computation, algorithms, programming languages, program design, computer software, computer hardware, and others. Computer science engineers are involved in many aspects of computing, from the design of individual microprocessors, personal computers, and supercomputers to circuit designing and writing software that powers them.

MANUFACTURING ENGINEERING

Manufacturing Sector is the engine of growth for every country and it provides a stable economy. The manufacturing sector will grow through adoption of technology platforms which include nano engineering, additive manufacturing, adaptive automation, precision manufacturing and sustainable manufacturing. The industry needs the skill and creativity to manufacture complex, high specialization products. This program provides an in depth

understanding of wide range of domains like advanced manufacturing processes, micro and nano manufacturing, additive manufacturing, lean manufacturing, Internet of things, machine learning and smart factory concepts and is an important link for industrial competitiveness. The syllabus for various courses has been designed in general to introduce the application of analytical and quantitative methods in manufacturing and to train the students to develop skills in the utilization of the modern tools such as simulation, optimization, statistical data analysis, and finite element analysis. During the course of study, the students will acquire knowledge and skills to solve practical problems encountered in manufacturing.

MARINE ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

Marine Environmental Science and Conservation will provide candidates with an understanding of the environmental science and conservation of marine and coastal organisms and ecosystems. Humans use coastal areas extensively, which often leads to conflicts between humans and the natural roles and services provided by marine and coastal ecosystems, as well as their constituent organisms. The course will focus on the major principles of marine diversity and conservation and on methods to bring human communities into a better relationship. The candidates will explore: conservation: marine ecosystem processes; the functional roles of marine and coastal organisms; biodiversity; relevance of marine science to current scientific, social, health, and economics, threats to marine ecosystems, species; communities; ecosystem function and services; adaptive management. Students will interact with local stakeholders, scientists, and conservation professionals. The overall goal of the course is to provide candidates with a working understanding of marine and coastal environmental science and conservation biology.

MEDICAL, MOLECULAR AND VETERINARY SCIENCES

Explores the nature of emerging and re-emerging infectious diseases from biological, historical, societal, technological and environmental. Provides laboratory experience working on a bacteriophage genomics research project. Students will study novel bacteriophage they isolate from the environment. Topics covered include phage biology, bacteria and phage culturing and amplification, DNA isolation, restriction digest analysis, agarose gel electrophorosis, and electron microscopy. Provides laboratory experience working on DNA sequence from a bateriphage isolated during the previous semester. Topics include bioinformatics, genome annotation, open reading frame and RNA identification, BLAST analysis, phylogenetics and submission to a genomic database. In addition students will gain skills in reading the scientific literature, writing scientific papers, and making oral presentations. Structure and properties of biological molecules, including carbohydrates, lipids, proteins, nucleic acids, vitamins and hormones, composition and function of body fluids, study of digestion and metabolism. The structure of DNA and of genes, and the mechanisms of gene regulation, particularly as they pertain to cell growth and differentiation. Includes a discussion of the experimental techniques used in the genetic manipulation of organisms.

ENGINEERING AND RELATED TECHNOLOGIES

Engineering technology is a more practical, hands-on course of study compared to other engineering majors. It is designed to give the student practical training in the installation, maintenance, and operation of engineering systems, their components, and instruments. Engineering technologists should have an understanding of both the design and the operation of systems. They are skilled problem- -solvers who keep operations going. Students concentrate in one particular area of engineering technology: telecommunications, computers, electronics, construction, drafting, and surveying, to name a few. Given the vital

role engineering technologists play, job prospects are good. Candidate should expect to take Physics and advanced physics, applied mathematics, chemistry, physical chemistry, statistics, engineering systems, dynamics, engineering technologies, specialized technology courses.

EDUCATION: INCLUSIVE/SOCIAL JUSTICE/SPECIAL EDUCATION

An overview of the principles, processes, strategies and resources for differentiating instruction to support the diverse student needs in today's classrooms. The course will provide an opportunity for students to explore a variety of strategies and to develop practical plans for implementation. An exploration of issues related to teaching students with diverse needs. Topics include the learning needs of students in the low- and high- incidence ranges, the roles and responsibilities of the special education teacher, provincial policies and procedures, and models to support students in inclusive classrooms. Explores the concepts of justice, conflict and social change and examines the ways in which political, economic, media, education, and other institutions create challenges for justice. Also examines efforts to resist existing structural and institutional arrangements and encourage social change to better meet human needs. Examines social theories of justice, conflict and social change. This includes engagement with Marxist, Postcolonial, Postmodern, Poststructuralist, Critical Race, Feminist, and Queer theories. As the SJS major is dedicated to foundations in and accountability to grassroots knowledge and power, this course will consistently locate theory in concrete examples.

SOCIETY AND CULTURE

The course will introduce to the students concepts, theories and perspectives vital in the understanding of society and culture. An in-depth discussion of basic social institutions forming the social structure will be emphasized in order to increase the awareness of students of the current issues confronting the present social structure. In so doing, the students are also expected to understand their individual and collective functions in confronting such issues. Furthermore, a special discussion will be devoted on family planning, taking into account family planning and reproductive health concepts and issues that are significant agendum of the society’s project on social order.

BUSINESS ECONOMICS

Business Economics is the study of how businesses manage scarce resources. Business economics comprises topics like economic issues and problems related to business organization, management, and strategy. Macroeconomics is the study of the decisions of individuals, households, and businesses in specific markets, whereas macroeconomics is the study of the overall functioning of an economy such as basic economic growth, unemployment, or inflation.

PUBLIC HEALTH

This course focuses on the intersection of public health and nutrition and enables students to articulate, explain the purpose of, and apply core functions of public health including: assessment of the nutritional needs of the community, assurance and provision of programs that service those needs, and policy development to promote health. Students will develop critical thinking skills to allow evaluation of the scientific evidence supporting public health programs and policies. In addition, the class will expose students to a variety of professional careers in public health in community, clinical, and educational/academic settings. Public Health Ethics explores interdisciplinary perspectives using literary, philosophical, and

historical examples. Public health ethics has a special concern about functions of the state and organizations in protecting and promoting health.

MANAGEMENT INFORMATION SYSTEMS

Management Information Systems (MIS) is a formal discipline within business education that bridges the gap between computer science and well-known business disciplines such as finance, marketing, and management. In spite of this, most students will only take one or two MIS courses as part of their undergraduate program. The term *Management Information Systems* has several definitions that might depend on where you look or who you ask. Common among these many definitions is that MIS represent a collection of technologies, people, and processes that manage the information and communication resources of an organization. Even if you do not realize it, you use MIS every day. If you use email, you are using MIS, since email is an information system (though you, the user, only see one end of it). MIS can be the means by which information is transmitted (such as the Internet), the software that displays the information (such as Microsoft Excel), or the systems that manage the data. This is an applied course in information systems concepts and techniques used in today's competitive environment. Topics will include the concepts of enterprise information systems, use of information systems to achieve strategic goals and to gain competitive advantages, the impacts of information systems on business process reengineering and management, managerial issues in developing information systems, IS project management, and other contemporary IS technologies.

GOVERNANCE, PEACE BUILDING AND LEADERSHIP

This course focuses in governance, peace building and leadership and will cover a number of areas such as conceptual framework of peace and governance, globalization and Unipolar conflict, culture, conflict, society, frameworks in peace building, leadership and conflict transformation. By the end of the programme, the graduates will have transformative leadership and good governance ability in organisations both locally and internationally, the programme will inculcate leadership values and competences at the workplace. The programme aims to develop innovative, creative and astute leaders to serve in the public, private and civic society sectors.

COURSE OUTLINES

Course Title: Research Philosophy, Ethics, and Methods

Course Description:

This course provides a foundational understanding of research philosophy, ethical considerations, and various research methods. It equips students with critical thinking skills necessary for designing, conducting, and evaluating rigorous research. The course emphasizes ethical conduct, epistemological frameworks, and practical methodologies across disciplines.

Learning Objectives:

By the end of this course, students will be able to:

1. **Understand Research Philosophies**: Explore different research paradigms (positivism, interpretivism, critical theory) and their implications for research design.
2. **Navigate Ethical Challenges**: Analyze ethical dilemmas in research, including informed consent, confidentiality, and participant rights.

3. **Select Appropriate Research Methods**: Evaluate quantitative, qualitative, and mixed-methods approaches based on research questions.
4. **Develop Research Proposals**: Create well-structured research proposals, including research questions, hypotheses, and methodology.
5. **Critically Review Literature**: Assess existing research literature and identify gaps for original contributions.

Topics Covered:

1. **Epistemology and Ontology**:
    - Understanding different philosophical perspectives (positivism, constructivism, realism).
    - Implications for research design and knowledge generation.
2. **Ethical Considerations**:
    - Informed consent, privacy, and confidentiality.
    - Ethical review boards and guidelines.
    - Handling sensitive data and vulnerable populations.
3. **Quantitative Research Methods**:
    - Experimental design.
    - Surveys and questionnaires.
    - Data collection, analysis, and statistical tools.
4. **Qualitative Research Methods**:
    - Interviews, focus groups, and case studies.
    - Grounded theory and thematic analysis.
    - Reflexivity and researcher bias.
5. **Mixed-Methods Research**:
    - Combining quantitative and qualitative approaches.
    - Triangulation and complementarity.
6. **Research Proposal Development**:
    - Formulating research questions.
    - Literature review and theoretical framework.
    - Methodology selection and justification.

Assessment:

1. **Research Proposal (40%)**:
    - Develop a research proposal, including problem statement, objectives, and methodology.

- Ethical considerations and feasibility assessment.

2. **Critical Literature Review (30%)**:
    - Analyze and synthesize relevant literature.
    - Identify gaps and research opportunities.
3. **Class Participation and Discussions (15%)**:
    - Engage in class discussions, peer feedback, and critical reflection.
4. **Final Exam (15%)**:
    - Assess understanding of research philosophies, ethics, and methods.

Recommended Reading:

1. Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*.
2. Bryman, A. (2016). *Social Research Methods*.
3. Denzin, N. K., & Lincoln, Y. S. (Eds.). (2018). *The SAGE Handbook of Qualitative Research*.

Course Title: Descriptive Statistics

Course Description:

This course provides a foundational understanding of descriptive statistics—the essential tools for summarizing and interpreting data. Students learn graphical and numerical techniques to represent information effectively. Topics include measures of central tendency, variability, position, and dependence. Exploratory data analysis techniques are emphasized.

Learning Objectives:

By the end of this course, students will be able to:

1. **Interpret Data Graphically**: Create and interpret histograms, scatter plots, box plots, and other visual representations.
2. **Calculate Descriptive Measures**: Compute mean, median, mode, variance, standard deviation, and percentiles.
3. **Understand Data Distribution**: Explore normal, skewed, and bimodal distributions.
4. **Assess Relationships**: Analyze correlation and covariance between variables.
5. **Apply Descriptive Techniques**: Use software tools (e.g., StatCrunch) for data analysis.

Topics Covered:

1. **Graphical Representation**:
    - Histograms, bar charts, scatter plots.
    - Data visualization principles.

2. **Measures of Central Tendency**:
    - Mean, median, mode.
    - Interpretation and use cases.
3. **Measures of Variability**:
    - Variance, standard deviation.
    - Range and interquartile range.
4. **Positional Measures**:
    - Percentiles and quartiles.
    - Box plots.
5. **Exploratory Data Analysis**:
    - Detecting outliers.
    - Data transformations.
6. **Correlation and Dependence**:
    - Pearson correlation coefficient.
    - Covariance.

Assessment:

1. **Assignments (40%)**:
    - Practical exercises in calculating descriptive statistics.
    - Interpretation of graphical representations.
2. **Midterm Exam (30%)**:
    - Assess understanding of central tendency, variability, and data distribution.
3. **Final Project (20%)**:
    - Apply descriptive techniques to a real-world dataset.
    - Present findings and insights.
4. **Class Participation (10%)**:
    - Engage in discussions, ask questions, and contribute to the learning community.

Recommended Reading:

- **MOORE, S. D., and McCABE, G. P.** (2009). *Introduction to the Practice of Statistics*, Sixth Edition, Freeman Press.

Course Title: Academic Communication Skills

Course Description:

The “Academic Communication Skills” course equips doctoral students with essential communication tools for successful academic careers. Through practical exercises and feedback, students enhance their ability to create well-crafted academic content. The course covers various genres of academic communication, including journal articles, conference papers, and job talks. Additionally, students learn about professional norms related to scholarly publication and the job search process.

Learning Objectives:

By the end of this course, students will be able to:

1. **Craft Effective Academic Communication**: Understand guidelines for creating clear, concise, and impactful academic content.
2. **Practice Communication Skills**: Engage in writing, presenting, and reviewing academic work.
3. **Navigate Professional Norms**: Learn about scholarly publication processes and job market expectations.

Topics Covered:

1. **Journal Articles**:
    - Structure, clarity, and coherence.
    - Literature review and theoretical frameworks.
2. **Conference Papers**:
    - Abstracts, introductions, and methodology sections.
    - Effective data presentation.
3. **Job Talks**:
    - Preparing and delivering engaging presentations.
    - Handling questions and feedback.
4. **Manuscript Review**:
    - Constructive peer review skills.
    - Ethical considerations.
5. **Professional Norms**:
    - Scholarly publishing ethics.
    - Job search strategies.

Assessment:

1. **Written Assignment with Feedback and Revision (30%)**:
    - Develop or revise a conference paper, journal article, or grant proposal.
    - Incorporate feedback for improvement.
2. **Oral Presentation with Option to Re-do (30%)**:

- Deliver a conference presentation or job talk.
- Opportunity for re-presentation after feedback.

3. **Manuscript Review (15%)**:
    - Review a paper in your field.
    - Practice writing constructive reviews.
4. **Class Participation (25%)**:
    - Attend classes, engage in discussions, and provide feedback to peers.
    - Short exercises on research elevator pitches, job search, and teaching.

Recommended Reading:

- **Moore, S. D., & McCabe, G. P.** (2009). *Introduction to the Practice of Statistics* (Sixth Edition).

Course Title: Special Topics

Course Description:

The “Special Topics” course delves into specific areas of research, exploring emerging trends, critical issues, and paradigm shifts within a chosen field. It provides an opportunity for in-depth exploration beyond standard curriculum. Students engage with cutting-edge topics, fostering intellectual curiosity and expanding their scholarly horizons.

Learning Objectives:

By the end of this course, students will be able to:

1. **Analyze Current Research Trends**: Understand recent developments and debates within the chosen special topic area.
2. **Synthesize Complex Information**: Integrate diverse perspectives and critically evaluate scholarly literature.
3. **Contribute to Discourse**: Engage in informed discussions and propose novel research directions.

Topics Covered:

1. **Emerging Research Paradigms**:
    - Exploration of new theoretical frameworks and methodologies.
    - Case studies illustrating paradigm shifts.
2. **Controversial Issues**:
    - In-depth analysis of contentious topics within the field.
    - Ethical considerations and differing viewpoints.
3. **Cutting-Edge Research Areas**:
    - Investigation of niche subfields or interdisciplinary intersections.

- Guest lectures by experts in specialized domains.

4. **Research Design Challenges**:
    - Addressing methodological complexities.
    - Balancing rigor and practicality.

Assessment:

1. **Critical Analysis Papers (40%)**:
    - Students write analytical essays on key readings related to the special topic.
    - Evaluate strengths, weaknesses, and implications.
2. **Class Participation and Discussions (30%)**:
    - Active engagement in seminars, debates, and peer-led sessions.
    - Contribution to intellectual discourse.
3. **Research Proposal (20%)**:
    - Develop a research proposal related to the special topic.
    - Justify the research question, methodology, and significance.
4. **Final Presentation (10%)**:
    - Present findings from the research proposal.
    - Encourage peer feedback and scholarly exchange.

Recommended Reading:

- **Varies by Special Topic**: Assigned readings from recent journal articles, books, and conference proceedings.

Course Title: Quantitative Social Research Methods

Course Description:

This course introduces students to the quantitative research process within the social sciences. Starting from the formulation of research questions and working through data collection and analysis, students will gain foundational knowledge of quantitative research methods. The course emphasizes concepts, analytic tools, and procedures essential for conducting rigorous quantitative research in social science contexts.

Learning Objectives:

By the end of this course, students will be able to:

1. Formulate Research Questions: Develop clear and relevant research questions.
2. Design Effective Surveys and Experiments: Understand survey design, sampling techniques, and experimental setups.
3. Analyze Quantitative Data: Apply statistical methods to analyze data.

4. Interpret Findings: Draw meaningful conclusions from quantitative research results.

Topics Covered:

1. Research Design and Hypothesis Formulation:
    - Understanding the research process.
    - Developing hypotheses and operationalizing variables.
2. Survey Research:
    - Designing surveys (question types, wording, response options).
    - Sampling techniques (probability and non-probability sampling).
3. Experimental Design:
    - Randomized controlled trials.
    - Quasi-experimental designs.
4. Data Collection and Management:
    - Data sources (surveys, administrative records, experiments).
    - Data cleaning and preparation.
5. Descriptive Statistics:
    - Measures of central tendency (mean, median, mode).
    - Measures of dispersion (variance, standard deviation).
6. Inferential Statistics:
    - Hypothesis testing (t-tests, ANOVA, chi-square).
    - Regression analysis (linear, logistic).

Assessment:

1. Research Proposal (40%):
    - Develop a research proposal with clear research questions and a proposed quantitative methodology.
2. Data Analysis Project (30%):
    - Analyze a provided dataset using appropriate statistical techniques.
    - Interpret and present findings.
3. Class Participation and Discussions (20%):
    - Engage in discussions, peer feedback, and critical thinking exercises.
4. Final Exam (10%):
    - Assess understanding of quantitative research concepts.

Recommended Reading:

- Agresti, A., & Finlay, B. (2018). *Statistical Methods for the Social Sciences*.

- Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics*.

Course Title: Computer Science for Researchers

Course Description:

The “Computer Science for Researchers” course equips doctoral students with essential skills and knowledge to conduct rigorous research in computer science. Students explore research methods, ethical considerations, and effective communication strategies. The course covers both theoretical foundations and practical applications relevant to advanced research.

Learning Objectives:

By the end of this course, students will be able to:

1. Understand Research Methods: Grasp various research methodologies used in computer science.
2. Navigate Ethical Challenges: Be aware of legal and ethical aspects of research.
3. Write Effective Research Proposals: Develop feasible and well-structured research proposals.
4. Analyze and Communicate Research Findings: Apply statistical analysis and communicate results effectively.

Topics Covered:

1. Introduction to Research Methods:
    - Types of research (qualitative, quantitative, mixed methods).
    - Literature review and secondary sources.
2. Ethical Considerations in Computer Science Research:
    - Legal frameworks.
    - Social and ethical issues.
3. Research Proposal Writing:
    - Formulating research questions.
    - Effective proposal structure.
4. Data Collection and Analysis:
    - Surveys, experiments, and data sources.
    - Descriptive and inferential statistics.
5. Academic Writing and Communication:
    - Scholarly writing strategies.
    - Peer review and academic discourse.

Assessment:

1. Research Proposal (40%):
    - Develop a research proposal related to a computer science topic.
    - Justify the research question and methodology.
2. Data Analysis Project (30%):
    - Analyze data using appropriate statistical techniques.
    - Interpret findings in a research context.
3. Academic Writing Exercises (20%):
    - Practice writing research summaries, abstracts, and literature reviews.
4. Class Participation (10%):
    - Engage in discussions, peer feedback, and critical analysis.

Recommended Reading:

- **Agr**esti, A., & Finlay, B. (2018). *Statistical Methods for the Social Sciences*.
- Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics*.

Course Title: Research Survey and Analysis (Student Data Collection and Analysis for the Thesis)

Course Description:

This course focuses on designing, conducting, and analyzing research surveys for doctoral theses. Students learn practical skills related to survey development, data collection, and statistical analysis. The course emphasizes ethical considerations, survey validity, and reliability. Participants gain hands-on experience in administering surveys and interpreting results.

Learning Objectives:

By the end of this course, students will be able to:

1. **Design Effective Surveys**: Create well-structured survey instruments aligned with research objectives.
2. **Implement Data Collection Strategies**: Understand sampling techniques, administer surveys, and manage data.
3. **Analyze Survey Data**: Apply statistical methods to interpret survey responses.
4. **Evaluate Survey Validity and Reliability**: Assess the quality of survey instruments.

Topics Covered:

1. **Survey Design**:
    - Types of survey questions (closed-ended, open-ended).
    - Question wording and response options.
    - Pilot testing and refinement.

2. **Sampling Techniques**:
    - Probability sampling (simple random, stratified, cluster).
    - Non-probability sampling (convenience, snowball).
3. **Data Collection Methods**:
    - Online surveys, face-to-face interviews, telephone surveys.
    - Ethical considerations in survey research.
4. **Survey Administration**:
    - Recruitment strategies.
    - Data management and cleaning.
5. **Statistical Analysis**:
    - Descriptive statistics (mean, median, mode, variance).
    - Inferential statistics (t-tests, chi-square, correlation).

Assessment:

1. **Survey Development Project (40%)**:
    - Design and pilot a survey instrument.
    - Justify choices related to question format and sampling.
2. **Survey Implementation (30%)**:
    - Administer the survey to a target population.
    - Reflect on challenges and adaptations.
3. **Data Analysis Report (20%)**:
    - Analyze survey responses using appropriate statistical methods.
    - Interpret findings and draw conclusions.
4. **Class Participation and Peer Feedback (10%)**:
    - Engage in discussions, provide feedback to peers, and share insights.

Recommended Reading:

- Holliday, A. (2007). *Doing and Writing Qualitative Research*. SAGE.
- Silverman, D. (2012). *Qualitative Research: Issues of Theory, Method, and Practice*. SAGE.

Course Title: Academic Teaching for 2 Semesters

Course Description:

The “Academic Teaching” course prepares doctoral students for effective teaching roles within academia. Over two semesters, students engage in pedagogical theory, practical teaching

strategies, and classroom management techniques. The course emphasizes student-centered learning, assessment methods, and inclusive teaching practices.

Learning Objectives:

By the end of this course, students will be able to:

1. **Design Effective Lesson Plans**: Develop well-structured and engaging teaching materials.
2. **Facilitate Active Learning**: Apply student-centered teaching approaches.
3. **Assess Student Performance**: Use formative and summative assessment methods.
4. **Create Inclusive Learning Environments**: Promote diversity and equity in the classroom.

Topics Covered:

1. **Foundations of Teaching and Learning**:
    - Pedagogical theories (constructivism, behaviorism, andragogy).
    - Learning objectives and outcomes.
2. **Course Design and Syllabus Development**:
    - Aligning learning objectives, assessments, and content.
    - Creating inclusive syllabi.
3. **Effective Classroom Strategies**:
    - Active learning techniques (group work, case studies, flipped classrooms).
    - Managing discussions and student engagement.
4. **Assessment and Feedback**:
    - Formative assessment (quizzes, peer review).
    - Summative assessment (exams, projects).
5. **Inclusive Teaching Practices**:
    - Addressing diverse student needs.
    - Culturally responsive teaching.

Assessment:

1. **Teaching Portfolio (40%)**:
    - Compile teaching philosophy, sample lesson plans, and syllabi.
    - Reflect on teaching experiences.
2. **Microteaching Sessions (30%)**:
    - Deliver short teaching demonstrations.
    - Receive peer and instructor feedback.

3. **Classroom Observation (20%)**:
    - Observe experienced instructors.
    - Analyze teaching strategies.
4. **Participation and Reflection (10%)**:
    - Engage in discussions, share insights, and reflect on teaching practices.

Recommended Reading:

- Davis, B. G. (2009). *Tools for Teaching*.
- Nilson, L. B. (2016). *Teaching at Its Best: A Research-Based Resource for College Instructors*.

Course Title: Nanotechnology (Publications and Thesis)

Course Description:

The “Nanotechnology (Publications and Thesis)” course is designed for doctoral students specializing in nanotechnology. It focuses on advanced research, scientific writing, and the preparation of scholarly publications. Students engage in critical analysis, data interpretation, and effective communication of research findings. The course culminates in the preparation of a high-quality thesis.

Learning Objectives:

By the end of this course, students will be able to:

1. **Conduct Original Research**: Design and execute independent research projects in nanotechnology.
2. **Write Scholarly Publications**: Prepare research articles suitable for publication in peer-reviewed journals.
3. **Develop a High-Quality Thesis**: Synthesize research findings into a comprehensive and well-structured thesis.
4. **Present Research Effectively**: Communicate research outcomes through oral presentations and posters.

Topics Covered:

1. **Advanced Nanotechnology Research**:
    - Cutting-edge topics in nanomaterials, nanodevices, and nanoscale phenomena.
    - Interdisciplinary approaches and emerging trends.
2. **Scientific Writing and Publication**:
    - Structure of research articles (introduction, methods, results, discussion).
    - Ethical considerations and citation practices.
3. **Data Analysis and Interpretation**:

- Statistical methods for nanotechnology research.
- Visualization of complex data.

4. **Thesis Preparation**:
    - Thesis organization and chapters (literature review, methodology, results, conclusion).
    - Effective use of figures, tables, and references.

Assessment:

1. **Research Publications (40%)**:
    - Prepare and submit at least one research article for publication.
    - Peer review and revisions.
2. **Thesis Development (30%)**:
    - Draft thesis chapters, including literature review and results.
    - Receive feedback from advisors.
3. **Oral Presentation (20%)**:
    - Present research findings in a seminar or conference setting.
    - Address questions and engage with the audience.
4. **Class Participation and Peer Review (10%)**:
    - Provide constructive feedback on peers' work.
    - Actively participate in discussions and workshops.

Recommended Reading:

- Currell, B. R., & Eldridge, J. (2016). *Introduction to Nanoscience and Nanotechnology*.
- Day, R. A., & Gastel, B. (2012). *How to Write and Publish a Scientific Paper*.

Course Title: Cybersecurity (Publications and Thesis)

Course Description:

The "Cybersecurity (Publications and Thesis)" course is designed for doctoral students specializing in cybersecurity. It focuses on advanced research, scientific writing, and the preparation of scholarly publications. Students engage in critical analysis, data interpretation, and effective communication of research findings. The course culminates in the preparation of a high-quality thesis.

Learning Objectives:

By the end of this course, students will be able to:

1. **Conduct Original Research**: Design and execute independent research projects in cybersecurity.

2. **Write Scholarly Publications**: Prepare research articles suitable for publication in peer-reviewed journals.
3. **Develop a High-Quality Thesis**: Synthesize research findings into a comprehensive and well-structured thesis.
4. **Present Research Effectively**: Communicate research outcomes through oral presentations and posters.

Topics Covered:

1. **Advanced Cybersecurity Research**:
    - Cutting-edge topics in network security, cryptography, threat intelligence, and privacy.
    - Interdisciplinary approaches and emerging trends.
2. **Scientific Writing and Publication**:
    - Structure of research articles (introduction, methods, results, discussion).
    - Ethical considerations and citation practices.
3. **Data Analysis and Interpretation**:
    - Statistical methods for cybersecurity research.
    - Visualization of complex data.
4. **Thesis Preparation**:
    - Thesis organization and chapters (literature review, methodology, results, conclusion).
    - Effective use of figures, tables, and references.

Assessment:

1. **Research Publications (40%)**:
    - Prepare and submit at least one research article for publication.
    - Peer review and revisions.
2. **Thesis Development (30%)**:
    - Draft thesis chapters, including literature review and results.
    - Receive feedback from advisors.
3. **Oral Presentation (20%)**:
    - Present research findings in a seminar or conference setting.
    - Address questions and engage with the audience.
4. **Class Participation and Peer Review (10%)**:
    - Provide constructive feedback on peers' work.
    - Actively participate in discussions and workshops.

Recommended Reading:

1. **Ross Anderson**. (2020). *Security Engineering: A Guide to Building Dependable Distributed Systems*.
    - This comprehensive book covers various aspects of cybersecurity, including cryptography, network security, and system design. It provides practical insights and case studies.
2. **Bruce Schneier**. (2015). *Secrets and Lies: Digital Security in a Networked World*.
    - Schneier's classic work delves into the challenges of digital security, emphasizing the importance of understanding threats and vulnerabilities.
3. **William Stallings**. (2017). *Cryptography and Network Security: Principles and Practice*.
    - A well-regarded textbook covering cryptographic techniques, network protocols, and security mechanisms.

Course Title: Artificial Intelligence (Publications and Thesis)

Course Description:

The "Artificial Intelligence (AI)" course is designed for doctoral students specializing in AI research. It focuses on advanced research methodologies, scientific writing, and the preparation of scholarly publications. Students engage in critical analysis, data interpretation, and effective communication of research findings. The course culminates in the preparation of a high-quality thesis.

Learning Objectives:

By the end of this course, students will be able to:

1. **Conduct Original Research**: Design and execute independent research projects in artificial intelligence.
2. **Write Scholarly Publications**: Prepare research articles suitable for publication in peer-reviewed journals.
3. **Develop a High-Quality Thesis**: Synthesize research findings into a comprehensive and well-structured thesis.
4. **Present Research Effectively**: Communicate research outcomes through oral presentations and posters.

Topics Covered:

1. **Foundations of AI Research**:
    - Understanding AI paradigms (machine learning, natural language processing, computer vision).
    - Research design and hypothesis formulation.
2. **Scientific Writing and Publication**:
    - Structure of research articles (introduction, methods, results, discussion).

- Ethical considerations and citation practices.

3. **Data Analysis and Interpretation**:
    - Statistical methods for AI research.
    - Visualization of complex data.
4. **Thesis Preparation**:
    - Thesis organization and chapters (literature review, methodology, results, conclusion).
    - Effective use of figures, tables, and references.

Assessment:

1. **Research Publications (40%)**:
    - Prepare and submit at least one research article for publication.
    - Peer review and revisions.
2. **Thesis Development (30%)**:
    - Draft thesis chapters, including literature review and results.
    - Receive feedback from advisors.
3. **Oral Presentation (20%)**:
    - Present research findings in a seminar or conference setting.
    - Address questions and engage with the audience.
4. **Class Participation and Peer Review (10%)**:
    - Provide constructive feedback on peers' work.
    - Actively participate in discussions and workshops.

Recommended Reading:

1. **Russell, S., & Norvig, P.** (2016). *Artificial Intelligence: A Modern Approach*.
    - A comprehensive textbook covering various aspects of AI, including search algorithms, machine learning, and natural language processing.
2. **Goodfellow, I., Bengio, Y., & Courville, A.** (2016). *Deep Learning*.
    - An essential resource for understanding deep neural networks and their applications in AI.
3. **Bishop, C. M.** (2006). *Pattern Recognition and Machine Learning*.
    - A foundational book on machine learning algorithms and statistical pattern recognition.

Course Title: Robotics (Publications and Thesis)

Course Description:

The “Robotics (Publications and Thesis)” course is designed for doctoral students specializing in robotics research. It focuses on advanced research methodologies, scientific writing, and the preparation of scholarly publications. Students engage in critical analysis, data interpretation, and effective communication of research findings. The course culminates in the preparation of a high-quality thesis.

Learning Objectives:

By the end of this course, students will be able to:

1. **Conduct Original Research**: Design and execute independent research projects in robotics.
2. **Write Scholarly Publications**: Prepare research articles suitable for publication in peer-reviewed journals.
3. **Develop a High-Quality Thesis**: Synthesize research findings into a comprehensive and well-structured thesis.
4. **Present Research Effectively**: Communicate research outcomes through oral presentations and posters.

Topics Covered:

1. **Foundations of Robotics Research**:
    - Understanding robotics paradigms (manipulation, perception, motion planning).
    - Research design and hypothesis formulation.
2. **Scientific Writing and Publication**:
    - Structure of research articles (introduction, methods, results, discussion).
    - Ethical considerations and citation practices.
3. **Data Analysis and Interpretation**:
    - Statistical methods for robotics research.
    - Visualization of complex data.
4. **Thesis Preparation**:
    - Thesis organization and chapters (literature review, methodology, results, conclusion).
    - Effective use of figures, tables, and references.

Assessment:

1. **Research Publications (40%)**:
    - Prepare and submit at least one research article for publication.
    - Peer review and revisions.
2. **Thesis Development (30%)**:
    - Draft thesis chapters, including literature review and results.

- Receive feedback from advisors.

3. **Oral Presentation (20%)**:
    - Present research findings in a seminar or conference setting.
    - Address questions and engage with the audience.
4. **Class Participation and Peer Review (10%)**:
    - Provide constructive feedback on peers' work.
    - Actively participate in discussions and workshops.

Recommended Reading:

1. **Springer Handbook of Robotics**:
    - Authors: Bruno Siciliano, Oussama Khatib
    - This comprehensive handbook covers various aspects of robotics, including foundations, sensing, manipulation, and human-centered robotics.
2. **Robotics, Vision, and Control: Fundamental Algorithms in MATLAB**:
    - Author: Peter Corke
    - A practical book that introduces fundamental algorithms for robot vision and control using MATLAB.
3. **Probabilistic Robotics**:
    - Authors: Sebastian Thrun, Wolfram Burgard, Dieter Fox
    - This book explores probabilistic approaches to robot perception, localization, and mapping.
4. **Introduction to Robotics: Mechanics and Control (3rd Edition)**:
    - Author: John J. Craig
    - A classic introduction covering kinematics, dynamics, and control in robotics.
5. **Modern Robotics: Mechanics, Planning, and Control**:
    - Authors: Kevin M. Lynch, Frank C. Park
    - A comprehensive resource on modern robotics, including motion planning and control.

Course Title: Computer Science and Engineering (Publications and Thesis)

Course Description:

The course focuses on advanced research methods, scholarly writing, and the publication process in computer science and engineering. Students will explore cutting-edge topics, engage in original research, and contribute to the field through their thesis work.

Learning Objectives:

- Develop expertise in a specialized area of computer science and engineering.
- Conduct independent research, critically analyze existing literature, and identify research gaps.
- Understand the peer review process and academic publishing norms.
- Enhance technical writing skills for research papers and thesis chapters.

Topics of Research Covered:

1. **Research Methodology and Design:**
    - Quantitative and qualitative research methods.
    - Literature review techniques.
    - Formulating research questions and hypotheses.
2. **Advanced Topics in Computer Science and Engineering:**
    - Machine learning algorithms.
    - Data mining and big data analytics.
    - Cloud computing and distributed systems.
    - Cybersecurity and privacy.
    - Natural language processing.
    - Computer vision and image processing.
3. **Publication Strategies:**
    - Selecting reputable conferences and journals.
    - Writing research papers.
    - Responding to reviewer feedback.
    - Ethical considerations in publishing.
4. **Thesis Preparation:**
    - Defining a research problem.
    - Developing a research plan.
    - Collecting and analyzing data.
    - Structuring thesis chapters.

Assessment:

- Research Proposal (20%): A detailed proposal outlining the research topic, objectives, and methodology.
- Literature Review (15%): A critical review of relevant literature.

- Research Paper (35%): A publishable-quality research paper based on the student's work.
- Thesis Defense (30%): An oral defense of the completed thesis.

Recommended Reading:

1. Booth, W. C., Colomb, G. G., & Williams, J. M. (2008). *The Craft of Research*. University of Chicago Press.
2. Strunk, W., & White, E. B. (2000). *The Elements of Style*. Pearson.
3. IEEE Computer Society. (Various years). *Proceedings of IEEE Conferences*.
4. ACM Digital Library. (Various years). *ACM Transactions on Computing Systems*.

Course Title: Electronics and Electrical Engineering (Publications and Thesis)

Course Description:

This course delves into advanced research methods, scholarly writing, and the publication process within the field of electronics and electrical engineering. Doctoral students will engage in original research, contribute to the academic community, and develop their thesis work.

Learning Objectives:

1. **Mastery of Specialized Knowledge:**
    - Attain systematic comprehension and in-depth understanding of theories, methods, and applications related to electrical engineering fields, including electronics, communication, mechatronics, power, instrumentation, and control.
2. **Problem Solving and Research Proficiency:**
    - Demonstrate proficiency in analyzing and solving complex problems using relevant analytical methods, simulations, experiments, and independent research.
3. **Original Research Contribution:**
    - Synthesize original research that expands engineering knowledge through design and development.
4. **Ethical and Professional Conduct:**
    - Plan and execute research responsibly, professionally, and ethically.
    - Communicate knowledge and ideas effectively.

Topics of Research Covered:

1. **Advanced Electronics and Electrical Engineering Topics:**
    - High-frequency electronics.
    - Power electronics (including SiC-based devices).
    - Communication systems.

- Mechatronics and robotics.
- Instrumentation and control systems.

2. **Publication Strategies:**
    - Selecting reputable conferences and journals.
    - Writing research papers.
    - Responding to reviewer feedback.
    - Ethical considerations in publishing.
3. **Thesis Preparation:**
    - Defining a research problem.
    - Developing a research plan.
    - Collecting and analyzing data.
    - Structuring thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining the research topic, objectives, and methodology.
- Literature Review (15%): Critical review of relevant literature.
- Research Paper (35%): Publishable-quality research paper based on the student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. Booth, W. C., Colomb, G. G., & Williams, J. M. (2008). *The Craft of Research*. University of Chicago Press.
2. Strunk, W., & White, E. B. (2000). *The Elements of Style*. Pearson.
3. IEEE Conferences Proceedings (various years).
4. ACM Transactions on Computing Systems (various years).

Course Title: Mechatronics (Publications and Thesis)

Course Description:

This course bridges the gap between mechanical engineering, electronics, and computer science. It focuses on advanced research methods, scholarly writing, and the publication process within the field of mechatronics. Doctoral students will engage in original research, contribute to the academic community, and develop their thesis work.

Learning Objectives:

1. **Interdisciplinary Mastery:**
    - Attain a deep understanding of mechatronics principles, integrating mechanical design, electronics, control systems, and software.
2. **Research Proficiency:**
    - Conduct independent research, analyze existing literature, and identify research gaps.
    - Apply advanced techniques in mechatronics research.
3. **Publication Strategies:**
    - Understand the peer review process and academic publishing norms.
    - Write research papers suitable for conferences and journals.

Topics of Research Covered:

1. **Advanced Mechatronics Topics:**
    - Robotics and automation.
    - Sensor integration.
    - Embedded systems.
    - Control algorithms.
    - Human-machine interaction.
2. **Thesis Preparation:**
    - Defining a research problem.
    - Developing a research plan.
    - Collecting and analyzing data.
    - Structuring thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining the research topic, objectives, and methodology.
- Literature Review (15%): Critical review of relevant literature.
- Research Paper (35%): Publishable-quality research paper based on the student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. Booth, W. C., Colomb, G. G., & Williams, J. M. (2008). *The Craft of Research*. University of Chicago Press.
2. Strunk, W., & White, E. B. (2000). *The Elements of Style*. Pearson.
3. Relevant conference proceedings and journals in mechatronics research.

Course Title: Manufacturing Engineering (Publications and Thesis)

Course Description:

This course focuses on advanced research methods, scholarly writing, and the publication process within the field of manufacturing engineering. Doctoral students will engage in original research, contribute to the academic community, and develop their thesis work.

Learning Objectives:

1. **Interdisciplinary Mastery:**
    - Attain a deep understanding of manufacturing processes, materials, and quality control.
    - Integrate mechanical, electrical, and industrial engineering principles.
2. **Research Proficiency:**
    - Conduct independent research, analyze existing literature, and identify research gaps.
    - Apply advanced techniques in manufacturing research.
3. **Publication Strategies:**
    - Understand the peer review process and academic publishing norms.
    - Write research papers suitable for conferences and journals.

Topics of Research Covered:

1. **Advanced Manufacturing Topics:**
    - Additive manufacturing (3D printing).
    - Lean manufacturing and process optimization.
    - Quality assurance and statistical process control.
    - Sustainable manufacturing practices.
2. **Thesis Preparation:**
    - Defining a research problem.
    - Developing a research plan.
    - Collecting and analyzing data.
    - Structuring thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining the research topic, objectives, and methodology.
- Literature Review (15%): Critical review of relevant literature.

- Research Paper (35%): Publishable-quality research paper based on the student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. Booth, W. C., Colomb, G. G., & Williams, J. M. (2008). *The Craft of Research*. University of Chicago Press.
2. Strunk, W., & White, E. B. (2000). *The Elements of Style*. Pearson.
3. Relevant conference proceedings and journals in manufacturing engineering research.

Course Title: Speech and Hearing Bioscience and Technology (Publications and Thesis)

Course Description:

The **Speech and Hearing Bioscience and Technology (SHBT)** doctoral program is an innovative, interdisciplinary program that trains researchers in basic science, translational medicine, and engineering approaches to human communication. It covers all aspects of communication, including hearing, vestibular function, taste, smell, voice, speech, language, and music. Students gain rigorous training in various scientific disciplines while also benefiting from exposure to clinical practice.

Learning Objectives:

1. **Interdisciplinary Mastery:**
    - Develop a deep understanding of acoustics, engineering, computer science, cellular and molecular neuroscience, psychophysics, and cognitive aspects related to speech and hearing.
    - Integrate knowledge and skills from diverse fields.
2. **Research Proficiency:**
    - Conduct independent research.
    - Analyze existing literature and identify research gaps.
    - Apply advanced techniques in speech and hearing research.
3. **Publication Strategies:**
    - Understand the peer review process.
    - Write research papers suitable for conferences and journals.

Topics of Research Covered:

1. **Auditory Neuroscience:**
    - Neural mechanisms underlying hearing and auditory perception.
    - Signal processing in the auditory system.
2. **Speech and Language:**

- Speech production and perception.
- Language processing and disorders.

3. **Hearing Technology:**
    - Hearing aids and cochlear implants.
    - Assistive technologies for communication.
4. **Thesis Preparation:**
    - Define a research problem.
    - Develop a research plan.
    - Collect and analyze data.
    - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining the research topic, objectives, and methodology.
- Literature Review (15%): Critical review of relevant literature.
- Research Paper (35%): Publishable-quality research paper based on the student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. Booth, W. C., Colomb, G. G., & Williams, J. M. (2008). *The Craft of Research*. University of Chicago Press.
2. Strunk, W., & White, E. B. (2000). *The Elements of Style*. Pearson.

Course Title: Architectural Engineering (Publications and Thesis)

Course Description:

The **PhD in Architectural Engineering** program provides an avenue for advanced study in the design, construction, and operation of buildings and their systems. Students specialize in relevant aspects of architectural engineering, including building energy and environmental systems, structures, or construction engineering and management. Through state-of-the-art research, students achieve mastery in the study of buildings and their systems, demonstrated by successful dissertation defense and publication of novel research results in peer-reviewed journals. Graduates are prepared for careers in academia and industrial research and development.

Learning Objectives:

1. **Interdisciplinary Mastery:**
    - Deep understanding of architectural engineering principles.
    - Integration of mechanical, civil, and related engineering disciplines.
2. **Research Proficiency:**
    - Independent research and analysis of existing literature.
    - Application of advanced techniques in architectural engineering research.
3. **Publication Strategies:**
    - Understanding of peer review processes.
    - Writing research papers suitable for conferences and journals.

Topics of Research Covered:

1. **Building Energy and Environmental Systems:**
    - Sustainable design.
    - HVAC systems.
    - Indoor air quality.
2. **Structures:**
    - Structural analysis and design.
    - Seismic resilience.
    - Materials behavior.
3. **Construction Engineering and Management:**
    - Project management.
    - Construction methods.
    - Cost estimation.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of completed thesis.

Recommended Reading:

1. Booth, W. C., Colomb, G. G., & Williams, J. M. (2008). *The Craft of Research*. University of Chicago Press.
2. Strunk, W., & White, E. B. (2000). *The Elements of Style*. Pearson.

3. Relevant conference proceedings and journals in architectural engineering research.

Course Title: Mechanical Engineering (Publications and Thesis)

Course Description:

The PhD program in Mechanical Engineering aims to create a culture of scholarship and high-impact research. It prepares students for leadership careers in academia, industry, or government. The program emphasizes independent research, critical thinking, and the development of new knowledge in mechanical engineering.

Learning Objectives:

1. **Interdisciplinary Mastery:**
    - Deep understanding of mechanical engineering principles.
    - Integration of knowledge across related fields.
2. **Research Proficiency:**
    - Conduct independent research.
    - Analyze existing literature and identify research gaps.
    - Apply advanced techniques in mechanical engineering research.
3. **Publication Strategies:**
    - Understand peer review processes.
    - Write research papers suitable for conferences and journals.

Topics of Research Covered:

1. **Advanced Mechanical Engineering Topics:**
    - Fluid dynamics and heat transfer.
    - Solid mechanics and materials.
    - Dynamics and control systems.
    - Design and optimization.
2. **Thesis Preparation:**
    - Define a research problem.
    - Develop a research plan.
    - Collect and analyze data.
    - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant literature.

- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of completed thesis.

Recommended Reading:

1. Booth, W. C., Colomb, G. G., & Williams, J. M. (2008). *The Craft of Research*. University of Chicago Press.
2. Strunk, W., & White, E. B. (2000). *The Elements of Style*. Pearson.
3. Relevant conference proceedings and journals in mechanical engineering research.

Course Title: Renewable Energy (Publications and Thesis)

Course Description:

The PhD program in Renewable Energy aims to advance knowledge and research in sustainable energy sources. It prepares students for leadership roles in academia, industry, and policy. The program emphasizes independent research, critical thinking, and innovation in renewable energy technologies.

Learning Objectives:

1. **Interdisciplinary Mastery:**
    - Develop a deep understanding of renewable energy principles.
    - Integrate knowledge from various fields such as physics, engineering, and environmental science.
2. **Research Proficiency:**
    - Conduct original research in renewable energy systems.
    - Analyze existing literature and identify gaps.
    - Apply advanced techniques in renewable energy research.
3. **Publication Strategies:**
    - Understand peer review processes.
    - Write research papers suitable for conferences and journals.

Topics of Research Covered:

1. **Renewable Energy Technologies:**
    - Solar photovoltaics.
    - Wind energy.
    - Biomass and bioenergy.
    - Geothermal systems.
    - Hydropower.
2. **Energy Storage and Grid Integration:**

- Battery technologies.
- Grid stability and smart grids.
- Energy storage management.

3. **Policy and Economics of Renewable Energy:**
    - Renewable energy policies.
    - Economic feasibility and cost-benefit analysis.
    - Environmental impact assessment.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of completed thesis.

Recommended Reading:

1. Booth, W. C., Colomb, G. G., & Williams, J. M. (2008). *The Craft of Research*. University of Chicago Press.
2. Strunk, W., & White, E. B. (2000). *The Elements of Style*. Pearson.
3. Relevant conference proceedings and journals in renewable energy research.

Course Title: Smart Cities (Publications and Thesis)

Course Description:

The PhD program in Smart Cities focuses on advancing knowledge and research related to urban sustainability, technology integration, and data-driven solutions. Students explore how cities can leverage technology, data analytics, and innovative strategies to enhance quality of life, resource efficiency, and resilience.

Learning Objectives:

1. **Interdisciplinary Mastery:**
    - Develop a deep understanding of smart city concepts, including IoT, data science, urban planning, and governance.
    - Integrate knowledge from various fields such as computer science, engineering, and social sciences.
2. **Research Proficiency:**
    - Conduct original research in smart city domains.

- Analyze existing literature and identify research gaps.
- Apply advanced techniques in smart city research.

3. **Publication Strategies:**
    - Understand peer review processes.
    - Write research papers suitable for conferences and journals.

Topics of Research Covered:

1. **Urban Data Analytics:**
    - Big data processing for urban insights.
    - Predictive modeling for transportation, energy, and public services.
2. **Sustainable Infrastructure:**
    - Smart energy grids.
    - Water management and waste reduction.
    - Green building technologies.
3. **Urban Mobility and Transportation:**
    - Intelligent transportation systems.
    - Mobility-as-a-Service (MaaS).
    - Traffic optimization.
4. **Governance and Policy:**
    - Stakeholder engagement.
    - Privacy and ethical considerations.
    - Policy frameworks for smart cities.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of completed thesis.

Recommended Reading:

1. Booth, W. C., Colomb, G. G., & Williams, J. M. (2008). *The Craft of Research*. University of Chicago Press.
2. Strunk, W., & White, E. B. (2000). *The Elements of Style*. Pearson.
3. Relevant conference proceedings and journals in smart city research.

Course Title: Biomedical Engineering (Publications and Thesis)

Course Description:

The Doctor of Philosophy (PhD) in Biomedical Engineering is a research-based degree program that provides advanced training in the field of biomedical engineering. The program emphasizes original research and culminates in a dissertation focused on a specialty area within bioengineering.

Learning Objectives:

1. **Research Proficiency:**
    - Develop expertise in a specialized area of biomedical engineering.
    - Conduct independent research and contribute to the field.
    - Analyze existing literature and identify research gaps.
2. **Interdisciplinary Mastery:**
    - Integrate knowledge from various disciplines, including biology, engineering, and medicine.
    - Understand the complex interactions between biological systems and engineering solutions.

Topics of Research Covered:

1. **Biomedical Instrumentation and Imaging:**
    - Medical sensors and devices.
    - Imaging modalities (MRI, CT, ultrasound).
    - Signal processing for medical data.
2. **Biomechanics and Biomaterials:**
    - Mechanics of biological tissues.
    - Implant materials and tissue engineering.
    - Prosthetics and orthotics.
3. **Biomedical Signal Processing and Analysis:**
    - ECG, EEG, and other physiological signals.
    - Feature extraction and pattern recognition.
    - Diagnostic algorithms.
4. **Thesis Preparation:**
    - Define a research problem.
    - Develop a research plan.
    - Collect and analyze data.
    - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining the research topic and methodology.
- Literature Review (15%): Critical review of relevant literature.
- Research Paper (35%): Publishable-quality paper based on the student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. Booth, W. C., Colomb, G. G., & Williams, J. M. (2008). *The Craft of Research*. University of Chicago Press.
2. Strunk, W., & White, E. B. (2000). *The Elements of Style*. Pearson.
3. Relevant conference proceedings and journals in biomedical engineering research.

Course Title: Materials Science (Publications and Thesis)

Course Description:

The PhD program in Materials Science focuses on advanced research and training in materials, covering design, development, performance, protection, management, and marketing. Our multidisciplinary research activity addresses socially relevant materials themes, meeting industry and societal needs.

Learning Objectives:

1. **Interdisciplinary Mastery:**
    - Develop a deep understanding of materials science principles.
    - Integrate knowledge from various fields, including physics, chemistry, engineering, and materials characterization.
2. **Research Proficiency:**
    - Conduct independent research in materials science.
    - Analyze existing literature and identify research gaps.
    - Apply advanced techniques in materials research.

Topics of Research Covered:

1. **Materials Design and Development:**
    - Synthesis of novel materials.
    - Structure-property relationships.
    - Computational materials modeling.
2. **Materials Performance and Protection:**
    - Corrosion resistance.

- Surface coatings and treatments.
- Materials durability.

3. **Materials Management and Marketing:**
    - Supply chain management.
    - Intellectual property considerations.
    - Market analysis.
4. **Thesis Preparation:**
    - Define a research problem.
    - Develop a research plan.
    - Collect and analyze data.
    - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. Booth, W. C., Colomb, G. G., & Williams, J. M. (2008). *The Craft of Research*. University of Chicago Press.
2. Strunk, W., & White, E. B. (2000). *The Elements of Style*. Pearson.
3. Relevant conference proceedings and journals in materials science research.

Course Title: Astronomy (Publications and Thesis)

Course Description:

The PhD program in Astronomy provides an opportunity for advanced research and training in the field of astrophysics. Students engage in cutting-edge research, contribute to scientific knowledge, and demonstrate their expertise through a substantial thesis. The program emphasizes originality, critical thinking, and interdisciplinary collaboration.

Learning Objectives:

1. **Research Proficiency:**
    - Conduct independent research in astronomy and astrophysics.
    - Analyze existing literature and identify research gaps.
    - Make significant contributions to the field.

2. **Interdisciplinary Mastery:**
    - Integrate knowledge from physics, mathematics, and computational science.
    - Understand celestial phenomena, cosmology, and observational techniques.

Topics of Research Covered:

1. **Stellar Astrophysics:**
    - Stellar evolution and nucleosynthesis.
    - Stellar atmospheres and spectroscopy.
    - Binary star systems.
2. **Galactic and Extragalactic Astronomy:**
    - Galaxy formation and dynamics.
    - Active galactic nuclei.
    - Large-scale structure of the universe.
3. **Cosmology and Dark Matter:**
    - The Big Bang theory.
    - Cosmic microwave background radiation.
    - Dark matter and dark energy.
4. **Thesis Preparation:**
    - Define a research problem.
    - Develop a research plan.
    - Collect and analyze observational or theoretical data.
    - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant astronomical literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. Carroll, B. W., & Ostlie, D. A. (2007). *An Introduction to Modern Astrophysics*. Pearson.
2. Binney, J., & Merrifield, M. (1998). *Galactic Astronomy*. Princeton University Press.
3. Peebles, P. J. E. (1993). *Principles of Physical Cosmology*. Princeton University Press.

Course Title: Climate Change and Global Warming (Publications and Thesis)

Course Description:

The PhD program in Climate Change and Global Warming provides advanced training in understanding and addressing the complex challenges posed by climate change. Students engage in original research, contribute to scientific knowledge, and develop expertise in climate science, mitigation strategies, and adaptation measures.

Learning Objectives:

1. **Interdisciplinary Mastery:**
    - Develop a deep understanding of climate science, including atmospheric dynamics, oceanography, and Earth system interactions.
    - Integrate knowledge from environmental science, policy, and economics.
2. **Research Proficiency:**
    - Conduct independent research on climate change impacts, causes, and solutions.
    - Analyze existing literature and identify research gaps.
    - Apply advanced techniques in climate modeling and data analysis.

Topics of Research Covered:

1. **Climate Science Fundamentals:**
    - Greenhouse gas emissions.
    - Climate feedback mechanisms.
    - Paleoclimatology and historical climate records.
2. **Mitigation Strategies:**
    - Renewable energy adoption.
    - Carbon capture and storage.
    - Land-use planning for emissions reduction.
3. **Adaptation Measures:**
    - Resilience planning for vulnerable communities.
    - Coastal protection and sea-level rise adaptation.
    - Agriculture and water resource management.
4. **Thesis Preparation:**
    - Define a research problem related to climate change.
    - Develop a research plan.
    - Collect and analyze data.
    - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant climate change literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. IPCC (Intergovernmental Panel on Climate Change) Assessment Reports.
2. Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K. B., … & Miller, H. L. (Eds.). (2007). *Climate change 2007: The physical science basis*. Cambridge University Press.
3. Stern, N. (2007). *The economics of climate change: The Stern review*. Cambridge University Press.

Course Title: Forest Science (Publications and Thesis)

Course Description:

The **PhD in Forest Science** program provides advanced training in forest-related research, emphasizing interdisciplinary learning and cutting-edge research. Students engage in original research under the supervision of faculty members, contributing to the understanding and sustainable management of forest ecosystems.

Learning Objectives:

1. **Research Proficiency:**
    - Conduct independent research on forest-related topics.
    - Analyze existing literature and identify research gaps.
    - Make significant contributions to forest science.
2. **Interdisciplinary Mastery:**
    - Integrate knowledge from ecology, silviculture, forest management, and related fields.
    - Understand the complex interactions within forest ecosystems.

Topics of Research Covered:

1. **Forest Ecology and Biodiversity:**
    - Ecosystem dynamics.
    - Species interactions.
    - Conservation biology.

2. **Silviculture and Forest Management:**
    - Sustainable forest practices.
    - Regeneration techniques.
    - Forest planning and policy.
3. **Forest Health and Resilience:**
    - Pest and disease management.
    - Climate change impacts.
    - Restoration ecology.
4. **Thesis Preparation:**
    - Define a research problem.
    - Develop a research plan.
    - Collect and analyze data.
    - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant forest science literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. Franklin, J. F., & Forman, R. T. (1987). *Creating landscape patterns by forest cutting: Ecological consequences and principles*. Springer.
2. Oliver, C. D., & Larson, B. C. (1996). *Forest stand dynamics*. John Wiley & Sons.
3. Waring, R. H., & Franklin, J. F. (1979). *Evergreen coniferous forests of the Pacific Northwest*. Science, 204(4400), 1380-1386.

Course Title: Earth and Planetary Sciences (Publications and Thesis)

Course Description:

The PhD program in Earth and Planetary Sciences is a research-intensive program that emphasizes demanding and interdisciplinary learning opportunities. Students engage in original research, contribute to scientific knowledge, and develop expertise in various aspects of Earth and planetary sciences.

Learning Objectives:

1. **Research Proficiency:**

- Conduct independent research on Earth and planetary topics.
- Analyze existing literature and identify research gaps.
- Make significant contributions to the field.

2. **Interdisciplinary Mastery:**
    - Integrate knowledge from geology, atmospheric science, oceanography, and related fields.
    - Understand the complex interactions within Earth systems and planetary bodies.

Topics of Research Covered:

1. **Geology and Tectonics:**
    - Plate tectonics and geological processes.
    - Earth's interior structure and composition.
    - Geological time scales and stratigraphy.
2. **Atmospheric and Climate Science:**
    - Climate dynamics and modeling.
    - Paleoclimatology and climate change.
    - Atmospheric chemistry and circulation.
3. **Planetary Science:**
    - Study of other planets and celestial bodies.
    - Impact cratering and planetary evolution.
    - Astrobiology and the search for life beyond Earth.
4. **Thesis Preparation:**
    - Define a research problem related to Earth or planetary sciences.
    - Develop a research plan.
    - Collect and analyze data.
    - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant scientific literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. **“Earth Science”** by Tarbuck and Lutgens.
2. **“Planetary Sciences”** by Imke de Pater and Jack J. Lissauer.
3. Relevant scientific journals and conference proceedings in Earth and planetary sciences.

Course Title: Environmental Science (Publications and Thesis)

Course Description:

The PhD program in Environmental Science at the University of Northampton harnesses a diverse spectrum of academic disciplines and staff expertise to drive research and enterprise initiatives. These initiatives are dedicated to addressing real-world issues, uncovering facts, and building upon evidence to shape a vision for a sustainable tomorrow. Our investigative efforts are geared towards deepening insights into the intricate connections shared by our natural environment, humans, and wildlife. This could be your opportunity to contribute to research that inspires and makes a difference.

Learning Objectives:

1. **Research Proficiency:**
    - Conduct independent research on environmental topics.
    - Analyze existing literature and identify research gaps.
    - Make significant contributions to environmental science.
2. **Interdisciplinary Mastery:**
    - Integrate knowledge from ecology, environmental policy, climate science, and related fields.
    - Understand complex environmental systems and their interactions.

Topics of Research Covered:

1. **Land Use and Urban Planning:**
    - Advantages of green infrastructure.
    - Sustainable urban development.
    - Biodiversity conservation in urban areas.
2. **Climate Change and Adaptation:**
    - Mitigation strategies.
    - Resilience planning.
    - Impacts on ecosystems and communities.
3. **Environmental Policy and Governance:**
    - Environmental regulations.
    - Stakeholder engagement.

- Sustainable resource management.

4. **Thesis Preparation:**
    - Define a research problem related to environmental science.
    - Develop a research plan.
    - Collect and analyze data.
    - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant environmental science literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. IPCC (Intergovernmental Panel on Climate Change) Assessment Reports.
2. Carson, R. (1962). *Silent Spring*. Houghton Mifflin.
3. Leopold, A. (1949). *A Sand County Almanac*. Oxford University Press.

Course Title: Particles and Nuclear Physics (Publications and Thesis)

Course Description:

The PhD program in Particles and Nuclear Physics delves into the fundamental constituents of matter, their interactions, and the structure of atomic nuclei. Students engage in original research, contribute to scientific knowledge, and explore the mysteries of the subatomic world. This program combines theoretical and experimental approaches to deepen our understanding of the Universe.

Learning Objectives:

1. **Research Proficiency:**
    - Conduct independent research on particle physics and nuclear phenomena.
    - Analyze existing literature and identify research gaps.
    - Make significant contributions to the field.
2. **Interdisciplinary Mastery:**
    - Integrate knowledge from quantum mechanics, field theory, and nuclear structure.
    - Understand the role of particles in the evolution of the cosmos.

Topics of Research Covered:

1. **Particle Physics:**
    - Standard Model particles and interactions.
    - Quantum chromodynamics (QCD).
    - Beyond the Standard Model (BSM) physics.
2. **Nuclear Physics:**
    - Nuclear forces and shell structure.
    - Nuclear reactions and decays.
    - Neutrino physics and weak interactions.
3. **Experimental Techniques:**
    - Particle accelerators and detectors.
    - Data analysis methods.
    - High-energy physics experiments.
4. **Thesis Preparation:**
    - Define a research problem related to particles or nuclear physics.
    - Develop a research plan.
    - Collect and analyze data.
    - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant scientific literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. Griffiths, D. J. (2008). *Introduction to Elementary Particles*. Wiley-VCH.
2. Krane, K. S. (1987). *Introductory Nuclear Physics*. Wiley.
3. Peskin, M. E., & Schroeder, D. V. (1995). *An Introduction to Quantum Field Theory*. Westview Press.

Course Title: Physics (Publications and Thesis)

Course Description:

The **PhD in Physics** is a three- to four-year full-time research program in which you undertake a doctoral-level research project under the guidance of your supervisor(s). This program is not available in part-time mode of study and is not offered via distance learning. The doctoral work

culminates in a 75,000-word thesis that is defended in the form of a viva voce examination (oral defense).

Learning Objectives:

1. **Research Proficiency:**
    - Conduct independent research on physics-related topics.
    - Analyze existing literature and identify research gaps.
    - Make significant contributions to the field.
2. **Interdisciplinary Mastery:**
    - Integrate knowledge from quantum mechanics, relativity, condensed matter physics, particle physics, and related fields.
    - Understand the fundamental laws governing the behavior of matter and energy.

Topics of Research Covered:

1. **Quantum Mechanics and Particle Physics:**
    - Quantum states and wave functions.
    - Elementary particles and their interactions.
    - High-energy physics experiments.
2. **Condensed Matter Physics:**
    - Properties of solids, liquids, and gases.
    - Superconductivity and magnetism.
    - Semiconductor physics.
3. **Astrophysics and Cosmology:**
    - Stellar evolution and cosmological models.
    - Dark matter and dark energy.
    - Observational techniques in astronomy.
4. **Thesis Preparation:**
    - Define a research problem related to physics.
    - Develop a research plan.
    - Collect and analyze data.
    - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant scientific literature.

- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. Griffiths, D. J. (2008). *Introduction to Elementary Particles*. Wiley-VCH.
2. Kittel, C., & Kroemer, H. (1980). *Thermal Physics*. W. H. Freeman.
3. Carroll, S. M. (2004). *Spacetime and Geometry: An Introduction to General Relativity*. Addison-Wesley.

Course Title: Tropical Veterinary Science (Publications and Thesis)

Course Description:

The **PhD in Tropical Veterinary Science** program is designed for students who anticipate a career where research plays a major role. It focuses on independent research, academic leadership, and innovation. You'll delve into health-related topics within tropical veterinary science, guided by an expert supervisory team. The program encourages publication of research findings and emphasizes originality and contribution to existing knowledge.

Learning Objectives:

1. **Research Proficiency:**
    - Conduct independent research on tropical veterinary topics.
    - Analyze existing literature and identify research gaps.
    - Make a significant and unique contribution to knowledge.
2. **Interdisciplinary Mastery:**
    - Integrate knowledge from veterinary biosciences, animal sciences (health and welfare), and infectious diseases (public health and biosecurity).
    - Understand the complexities of tropical veterinary issues.

Topics of Research Covered:

1. **Veterinary Biosciences:**
    - Study of animal health, physiology, and genetics.
    - Disease mechanisms and diagnostics.
    - Zoonotic diseases.
2. **Animal Sciences - Health and Welfare:**
    - Livestock management in tropical environments.
    - Nutrition and disease prevention.
    - Animal welfare practices.
3. **Infectious Diseases - Public Health and Biosecurity:**

- Epidemiology of tropical diseases.
- Vector-borne diseases.
- One Health approaches.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant scientific literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. **"Veterinary Parasitology"** by M. A. Taylor and R. L. Coop.
2. **"Tropical Animal Health"** by J. E. F. Henton and J. R. Allonby.
3. Relevant scientific journals and conference proceedings in tropical veterinary science.

Course Title: Veterinary Science (Publications and Thesis)

Course Description:

The **PhD in Veterinary Science** program is designed for students who anticipate a career where research plays a major role. It focuses on independent research, academic leadership, and innovation. During this program, you'll delve into health-related topics within veterinary science, guided by an expert supervisory team. The program encourages the publication of research findings and emphasizes originality and contribution to existing knowledge.

Learning Objectives:

1. **Research Proficiency:**
    - Conduct independent research on veterinary topics.
    - Analyze existing literature and identify research gaps.
    - Make a significant and unique contribution to knowledge.
2. **Interdisciplinary Mastery:**
    - Integrate knowledge from veterinary biosciences, animal sciences (health and welfare), and infectious diseases (public health and biosecurity).
    - Understand the complexities of veterinary issues.

Topics of Research Covered:

1. **Veterinary Biosciences:**
    - Study of animal health, physiology, and genetics.
    - Disease mechanisms and diagnostics.

- Zoonotic diseases.

2. **Animal Sciences - Health and Welfare:**
    - Livestock management in tropical environments.
    - Nutrition and disease prevention.
    - Animal welfare practices.
3. **Infectious Diseases - Public Health and Biosecurity:**
    - Epidemiology of tropical diseases.
    - Vector-borne diseases.
    - One Health approaches.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant scientific literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. **"Veterinary Parasitology"** by M. A. Taylor and R. L. Coop.
2. **"Tropical Animal Health"** by J. E. F. Henton and J. R. Allonby.
3. Relevant scientific journals and conference proceedings in tropical veterinary science.

Course Title: Public Health (Publications and Thesis)

Course Description:

The **PhD in Public Health** program is designed for individuals who aspire to contribute significantly to the field of public health through original research. This program emphasizes independent inquiry, critical thinking, and scholarly excellence. As a doctoral student, you will engage in advanced research, develop expertise in a specific area of public health, and contribute to the evidence base that informs policy and practice.

Learning Objectives:

1. **Research Proficiency:**
    - Conduct independent research on public health topics.
    - Analyze existing literature and identify research gaps.
    - Make substantial contributions to the field through rigorous investigation.
2. **Interdisciplinary Mastery:**

- Integrate knowledge from epidemiology, health policy, environmental health, and social determinants of health.
- Understand the complex interactions that influence population health.

Topics of Research Covered:

1. **Epidemiology and Biostatistics:**
   - Study of disease patterns, risk factors, and health outcomes.
   - Advanced statistical methods for analyzing health data.
   - Design and conduct of epidemiological studies.
2. **Health Policy and Systems:**
   - Health systems analysis and evaluation.
   - Health policy development and implementation.
   - Health economics and resource allocation.
3. **Environmental and Occupational Health:**
   - Environmental risk assessment.
   - Occupational health and safety.
   - Environmental justice and health disparities.
4. **Thesis Preparation:**
   - Define a research problem related to public health.
   - Develop a research plan.
   - Collect and analyze data.
   - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant scientific literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. **"Epidemiology: Beyond the Basics"** by Moyses Szklo and F. Javier Nieto.
2. **"Health Policy and Politics: A Nurse's Guide"** by Milstead and Short.
3. Relevant scientific journals and conference proceedings in public health research.

Course Title: Genomics and Precision Medicine (Publications and Thesis)

Course Description:

The **PhD in Genomics and Precision Medicine** program is designed to prepare the next generation of professionals and leaders who will help implement precision and personalized medicine in the healthcare system. This multidisciplinary graduate program offers advanced knowledge and training in state-of-the-art information gathering and analysis technologies. Students learn to integrate “omics” data (dealing with global changes at the molecular level) with clinical data, aiming to improve disease prediction, prevention, and prognosis.

Learning Objectives:

1. **Research Proficiency:**
    - Conduct independent research in genomics and precision medicine.
    - Analyze and interpret complex genomic data.
    - Contribute to advancements in personalized healthcare.
2. **Interdisciplinary Mastery:**
    - Integrate knowledge from genetics, bioinformatics, epidemiology, and clinical populations.
    - Understand the impact of genomics on disease management.

Topics of Research Covered:

1. **Genomic Data Analysis:**
    - Techniques for analyzing DNA, RNA, and protein data.
    - Variant calling, structural variations, and functional annotations.
    - Integrating multi-omics data.
2. **Clinical Applications:**
    - Pharmacogenomics and drug response prediction.
    - Disease risk assessment based on genetic variants.
    - Personalized treatment strategies.
3. **Ethics and Regulatory Considerations:**
    - Privacy, consent, and data sharing.
    - Legal and ethical implications of precision medicine.
    - Regulatory frameworks for genomic testing.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant scientific literature.
- Research Paper (35%): Publishable-quality paper based on student’s work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. **"Introduction to Bioinformatics"** by Arthur M. Lesk.
2. **"Genomic Medicine: Principles and Practice"** by Dhavendra Kumar.

Course Title: Marine Environment and Sustainable Development (Publications and Thesis)

Course Description:

The **PhD in Marine Environment and Sustainable Development** program is designed for individuals passionate about advancing knowledge in marine science, environmental conservation, and sustainable development. This research-intensive program equips students with the skills to address complex marine challenges, promote environmental stewardship, and contribute to global sustainability efforts. Students engage in original research, collaborate with experts, and develop innovative solutions for marine ecosystems.

Learning Objectives:

1. **Research Proficiency:**
    - Conduct independent research on marine environmental issues.
    - Analyze existing literature and identify research gaps.
    - Generate novel insights to advance sustainable development goals.
2. **Interdisciplinary Mastery:**
    - Integrate knowledge from marine biology, oceanography, policy, and economics.
    - Understand the interconnectedness of marine ecosystems and human well-being.

Topics of Research Covered:

1. **Marine Biodiversity and Conservation:**
    - Ecosystem-based management.
    - Threats to marine species and habitats.
    - Restoration and conservation strategies.
2. **Sustainable Coastal Development:**
    - Coastal zone planning and resilience.
    - Blue economy and sustainable livelihoods.
    - Climate change adaptation in coastal areas.
3. **Marine Policy and Governance:**

- International maritime law.
- Marine protected areas.
- Stakeholder engagement and participatory approaches.

4. **Thesis Preparation:**
    - Define a research problem related to marine environment and sustainable development.
    - Develop a research plan.
    - Collect and analyze data.
    - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant scientific literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. **"The Ocean of Life: The Fate of Man and the Sea"** by Callum Roberts.
2. **"Our Dying Planet: An Ecologist's View of the Crisis We Face"** by Peter Sale.

Course Title: Epidemiology (Publications and Thesis)

Course Description:

The **PhD in Epidemiology** program is anchored in public health and quantitative population research and analysis. Students approach research using epidemiologic methods to understand complex human health problems. This program aims to train students to become independent research scientists and leaders who can develop epidemiological methods and conduct outstanding population-based research. The program emphasizes critical foundation skills, mastery and application of science, and effective communication.

Learning Objectives:

1. **Critical Evaluation of Literature:**
    - Critically evaluate public health and medical literature.
    - Identify gaps and formulate epidemiologic research questions addressing literature gaps.
2. **Research Project Development:**
    - Develop a research project addressing an important public health or clinical question.

- Apply appropriate advanced epidemiologic methods.

3. **Quantitative Data Analysis:**
    - Conduct quantitative data analysis using advanced statistical techniques.
    - Summarize results and draw appropriate conclusions.
4. **Grant Proposal Writing:**
    - Design and write an original research grant proposal.
    - Address reviewed funding in the student's selected area of interest.

Topics of Research Covered:

1. **Epidemiologic Methods:**
    - Advanced statistical techniques.
    - Study design and data collection.
    - Causal inference and bias assessment.
2. **Public Health and Clinical Questions:**
    - Addressing important health questions.
    - Applying epidemiologic methods to real-world scenarios.
    - Investigating disease risk factors and prevention strategies.
3. **Communication Skills:**
    - Communicate epidemiologic knowledge effectively.
    - Express research methodology, results, and interpretation to diverse audiences.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant scientific literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. **"Modern Epidemiology"** by Kenneth J. Rothman, Sander Greenland, and Timothy L. Lash.
2. **"Epidemiology: Beyond the Basics"** by Moyses Szklo and F. Javier Nieto.

Course Title: Mental Health (Publications and Thesis)

Course Description:

The **PhD in Mental Health** program focuses on advanced research and scholarship related to mental health. Students engage in rigorous inquiry, critical analysis, and original contributions to the field. This program equips students with the skills to address complex mental health issues, promote well-being, and advance evidence-based practices.

Learning Objectives:

1. **Research Proficiency:**
    - Conduct independent research on mental health topics.
    - Analyze existing literature and identify research gaps.
    - Make significant contributions to mental health knowledge.
2. **Interdisciplinary Mastery:**
    - Integrate knowledge from psychology, psychiatry, neuroscience, and public health.
    - Understand the multifaceted nature of mental health challenges.

Topics of Research Covered:

1. **Epidemiology and Risk Factors:**
    - Prevalence of mental health disorders.
    - Social determinants and vulnerability factors.
    - Longitudinal studies and risk assessment.
2. **Intervention Strategies:**
    - Evidence-based treatments and interventions.
    - Psychotherapy, pharmacotherapy, and alternative approaches.
    - Prevention and early intervention programs.
3. **Stigma and Mental Health:**
    - Understanding and combating mental health stigma.
    - Impact of stigma on help-seeking behavior.
    - Anti-stigma campaigns and public awareness.
4. **Thesis Preparation:**
    - Define a research problem related to mental health.
    - Develop a research plan.
    - Collect and analyze data.
    - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.

- Literature Review (15%): Critical review of relevant scientific literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. **"Diagnostic and Statistical Manual of Mental Disorders (DSM-5)"** by American Psychiatric Association.
2. **"The Oxford Handbook of Mental Health Nursing"** by Patrick Callaghan and Catherine Gamble.

Course Title: Occupational Health and Safety (Publications and Thesis)

Course Description:

The **PhD in Occupational Health and Safety** program is designed for individuals who aspire to advance scholarly research and their careers in this field. As new technologies, techniques, and materials rapidly infiltrate workplaces, occupational health and safety professionals face new challenges. This program equips students with the skills to address complex workplace safety issues, promote well-being, and contribute to evidence-based practices.

Learning Objectives:

1. **Research Proficiency:**
    - Conduct independent research on occupational health and safety topics.
    - Analyze existing literature and identify research gaps.
    - Make significant contributions to the field through rigorous investigation.
2. **Interdisciplinary Mastery:**
    - Integrate knowledge from industrial hygiene, ergonomics, risk assessment, and organizational behavior.
    - Understand the multifaceted nature of workplace safety.

Topics of Research Covered:

1. **Occupational Risk Assessment:**
    - Hazard identification and evaluation.
    - Quantitative risk assessment methods.
    - Control strategies and preventive measures.
2. **Workplace Ergonomics:**
    - Human factors and ergonomics principles.
    - Designing safe and efficient workspaces.
    - Reducing musculoskeletal disorders.
3. **Safety Culture and Behavior:**

- Organizational safety climate.
- Behavior-based safety programs.
- Motivating safe practices.

4. **Thesis Preparation:**
    - Define a research problem related to occupational health and safety.
    - Develop a research plan.
    - Collect and analyze data.
    - Structure thesis chapters.

Assessment:

- Research Proposal (20%): Detailed proposal outlining research topic and methodology.
- Literature Review (15%): Critical review of relevant scientific literature.
- Research Paper (35%): Publishable-quality paper based on student's work.
- Thesis Defense (30%): Oral defense of the completed thesis.

Recommended Reading:

1. **"Introduction to Occupational Health in Public Health Practice"** by Bernard J. Healey and Kenneth T. Walker.
2. **"Safety Management: A Human Approach"** by Dan Petersen.

Course Title: Pharmaceutical Medicine (Publications and Thesis)

Course Description:

This course provides advanced training in pharmaceutical medicine, emphasizing research, publications, and thesis work. Students will explore the intersection of medicine, pharmacology, and clinical research, with a focus on drug development, regulatory affairs, and evidence-based practice.

Learning Objectives:

1. **Understanding Drug Development**: Explore the stages of drug development, from preclinical research to clinical trials, and understand the role of pharmaceutical professionals.
2. **Critical Appraisal of Literature**: Develop skills to critically evaluate scientific literature, including clinical trials, systematic reviews, and meta-analyses.
3. **Ethics and Regulatory Compliance**: Understand ethical considerations in pharmaceutical research, including informed consent, data integrity, and regulatory compliance.
4. **Thesis Preparation**: Learn how to formulate research questions, design studies, and develop a thesis proposal.

5. **Publication Strategies**: Explore effective strategies for publishing research findings in peer-reviewed journals.

Topics of Research Covered:

1. **Clinical Pharmacology**: Pharmacokinetics, pharmacodynamics, drug interactions, and personalized medicine.
2. **Clinical Trials**: Study designs, patient recruitment, data collection, and statistical analysis.
3. **Drug Safety and Pharmacovigilance**: Adverse events reporting, risk assessment, and post-marketing surveillance.
4. **Health Economics and Outcomes Research (HEOR)**: Cost-effectiveness analysis, health-related quality of life, and real-world evidence.
5. **Regulatory Affairs**: FDA, EMA, and other regulatory agencies' guidelines for drug approval.
6. **Thesis Research**: Individual research projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. "Good Clinical Practice: A Question & Answer Reference Guide" by Susan E. Abbatt
2. "The Art of Scientific Writing: From Student Reports to Professional Publications in Chemistry and Related Fields" by Hans F. Ebel and Claus Bliefert
3. "Pharmaceutical Medicine" by Lionel D. Edwards and Andrew J. Fletcher

Course Title: Immunology (Publications and Thesis)

Course Description:

This course delves into advanced topics in immunology, emphasizing research, publications, and thesis work. Students will explore the intricate mechanisms of the immune system, its role in health and disease, and contribute to cutting-edge research.

Learning Objectives:

1. **In-Depth Immunology**: Understand the cellular and molecular basis of immune responses, including adaptive and innate immunity.
2. **Research Methodology**: Develop skills in experimental design, data analysis, and interpretation specific to immunological research.

3. **Clinical Applications**: Explore immunotherapy, vaccine development, and personalized medicine.
4. **Thesis Preparation**: Learn how to formulate research questions, design studies, and develop a thesis proposal.
5. **Publication Strategies**: Understand the process of publishing immunology research in peer-reviewed journals.

Topics of Research Covered:

1. **Cellular Immunology**: T cell subsets, B cells, antigen presentation, and cytokines.
2. **Immunopathology**: Autoimmunity, hypersensitivity reactions, and immune deficiencies.
3. **Cancer Immunology**: Tumor microenvironment, immunosurveillance, and immunotherapy.
4. **Viral and Bacterial Immunology**: Host-pathogen interactions, immune evasion, and vaccine strategies.
5. **Thesis Research**: Individual research projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Janeway’s Immunobiology” by Kenneth Murphy
2. “Cellular and Molecular Immunology” by Abul K. Abbas and Andrew H. Lichtman
3. “Immunology: A Short Course” by Richard Coico and Geoffrey Sunshine

Course Title: Global Health Delivery (Publications and Thesis)

Course Description:

This course focuses on advanced topics in global health delivery, emphasizing research, publications, and thesis work. Students will explore strategies to improve health outcomes in diverse populations, address health disparities, and contribute to evidence-based practices.

Learning Objectives:

1. **Health Systems Analysis**: Understand health system structures, financing, and policy frameworks globally.
2. **Epidemiology and Disease Burden**: Analyze disease patterns, risk factors, and health determinants across populations.

3. **Health Equity and Access**: Explore strategies to promote equitable access to healthcare services.
4. **Thesis Preparation**: Learn how to formulate research questions, design studies, and develop a thesis proposal.
5. **Publication Strategies**: Understand the process of publishing global health research in peer-reviewed journals.

Topics of Research Covered:

1. **Healthcare Delivery Models**: Comparative analysis of healthcare systems (e.g., universal healthcare, private vs. public systems).
2. **Community Health Interventions**: Design and evaluation of community-based programs (e.g., vaccination campaigns, maternal health initiatives).
3. **Health Disparities**: Addressing disparities related to income, gender, ethnicity, and geography.
4. **Health Financing and Insurance**: Funding mechanisms, health insurance, and financial risk protection.
5. **Thesis Research**: Individual research projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Global Health 101” by Richard Skolnik
2. “Introduction to Global Health” by Kathryn H. Jacobsen
3. “The Spirit Catches You and You Fall Down” by Anne Fadiman

Course Title: Neuroscience (Publications and Thesis)

Course Description:

This course focuses on advanced topics in neuroscience, emphasizing research, publications, and thesis work. Students will explore the intricacies of the nervous system, from molecular mechanisms to cognitive processes, and contribute to cutting-edge research.

Learning Objectives:

1. **Neurobiology Fundamentals**: Understand the cellular and molecular basis of neural function, including synaptic transmission, plasticity, and neuroanatomy.

2. **Research Methodology**: Develop skills in experimental design, data analysis, and interpretation specific to neuroscience research.
3. **Cognitive Neuroscience**: Explore brain processes related to perception, memory, attention, and decision-making.
4. **Thesis Preparation**: Learn how to formulate research questions, design studies, and develop a thesis proposal.
5. **Publication Strategies**: Understand the process of publishing neuroscience research in peer-reviewed journals.

Topics of Research Covered:

1. **Neuronal Circuits**: Study neural networks, connectivity, and functional specialization.
2. **Neurodegenerative Diseases**: Investigate disorders like Alzheimer's, Parkinson's, and amyotrophic lateral sclerosis (ALS).
3. **Brain Imaging Techniques**: MRI, fMRI, PET, and EEG for mapping brain activity.
4. **Neuropharmacology**: Effects of drugs on neural function and behavior.
5. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. "Principles of Neural Science" by Eric R. Kandel, James H. Schwartz, and Thomas M. Jessell
2. "Cognitive Neuroscience: The Biology of the Mind" by Michael S. Gazzaniga, Richard B. Ivry, and George R. Mangun
3. "Neuroscience: Exploring the Brain" by Mark F. Bear, Barry W. Connors, and Michael A. Paradiso

Course Title: Microbiology (Publications and Thesis)

Course Description:

This course focuses on advanced topics in microbiology, emphasizing research, publications, and thesis work. Students will explore the diverse world of microorganisms, their impact on health, industry, and the environment, and contribute to cutting-edge research.

Learning Objectives:

1. **Microbial Diversity**: Understand the taxonomy, physiology, and ecology of bacteria, viruses, fungi, and archaea.
2. **Research Methodology**: Develop skills in experimental design, data analysis, and interpretation specific to microbiological research.
3. **Applied Microbiology**: Explore applications in medicine, biotechnology, food safety, and environmental management.
4. **Thesis Preparation**: Learn how to formulate research questions, design studies, and develop a thesis proposal.
5. **Publication Strategies**: Understand the process of publishing microbiology research in peer-reviewed journals.

Topics of Research Covered:

1. **Medical Microbiology**: Infectious diseases, antimicrobial resistance, diagnostics, and vaccine development.
2. **Industrial Microbiology**: Fermentation, enzyme production, biofuels, and bioremediation.
3. **Environmental Microbiology**: Microbial ecology, nutrient cycling, and pollution control.
4. **Microbial Genetics and Genomics**: DNA sequencing, gene expression, and genetic engineering.
5. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Brock Biology of Microorganisms” by Michael T. Madigan, Kelly S. Bender, and Daniel H. Buckley
2. “Microbiology: An Introduction” by Gerard J. Tortora, Berdell R. Funke, and Christine L. Case
3. “Medical Microbiology” by Patrick R. Murray, Ken S. Rosenthal, and Michael A. Pfaller

Course Title: Biomedical Science (Publications and Thesis)

Course Description:

This program focuses on advanced topics in biomedical science, emphasizing research, publications, and thesis work. Biomedical scientists play a crucial role in improving human health by exploring life processes in humans. They lay the foundations for understanding and investigating health, disease, treatment, and prevention.

Learning Objectives:

1. **Biomedical Research Fundamentals**: Understand the principles of experimental design, data analysis, and interpretation specific to biomedical research.
2. **Health and Disease Mechanisms**: Explore cellular and molecular aspects of health, disease pathways, and therapeutic targets.
3. **Research Ethics and Communication**: Learn ethical considerations in research and effective communication of findings.
4. **Thesis Preparation**: Formulate research questions, design studies, and develop a thesis proposal.
5. **Publication Strategies**: Understand the process of publishing biomedical research in peer-reviewed journals.

Topics of Research Covered:

1. **Cellular and Molecular Biology**: DNA, RNA, proteins, and cellular signaling.
2. **Pathophysiology**: Mechanisms underlying diseases (e.g., cancer, cardiovascular disorders, neurodegenerative conditions).
3. **Translational Research**: Bridging lab discoveries to clinical applications.
4. **Biomedical Techniques**: Lab methods, imaging, and bioinformatics.
5. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Essentials of Biomedical Research” by P. Michael Conn
2. “Molecular Biology of the Cell” by Bruce Alberts et al.
3. “Writing and Publishing Your Thesis, Dissertation, and Research: A Guide for Students in the Helping Professions” by P. Paul Heppner and Mary J. Heppner

Course Title: Regenerative Medicine and Entrepreneurship (Publications and Thesis)

Course Description:

This interdisciplinary course integrates regenerative medicine research with entrepreneurial principles. Students will explore cutting-edge developments in tissue repair, stem cell therapies, and gene correction strategies while also learning how to translate scientific discoveries into commercial impact.

Learning Objectives:

1. **Advanced Regenerative Medicine**: Understand the latest breakthroughs in stem cell biology, tissue engineering, and regenerative therapies.
2. **Entrepreneurial Skills**: Learn business fundamentals, innovation, intellectual property, and startup strategies.
3. **Research Ethics and Integrity**: Explore ethical considerations in scientific entrepreneurship.
4. **Thesis Preparation**: Formulate research questions, design studies, and develop a thesis proposal.
5. **Publication Strategies**: Understand the process of publishing regenerative medicine research in peer-reviewed journals.

Topics of Research Covered:

1. **Stem Cell Therapies**: Clinical applications, safety, and efficacy.
2. **Tissue Engineering**: Biomaterials, scaffolds, and organ regeneration.
3. **Gene Editing and Repair**: CRISPR/Cas9, gene therapy, and personalized medicine.
4. **Entrepreneurship in Biomedicine**: Startup funding, market analysis, and business models.
5. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “The Lean Startup” by Eric Ries
2. “Regenerative Medicine: From Protocol to Patient” by Gustav Steinhoff and Doris A. Taylor
3. “Business Model Generation” by Alexander Osterwalder and Yves Pigneur

Course Title: Pediatric Nursing (Publications and Thesis)

Course Description:

This course integrates advanced pediatric nursing practice with research, emphasizing publications and thesis work. Students will explore evidence-based care for children, contribute to scholarly publications, and develop expertise in pediatric nursing research.

Learning Objectives:

1. **Advanced Pediatric Nursing Practice**: Understand specialized care for infants, children, and adolescents, including health promotion, disease prevention, and family-centered approaches.
2. **Research Methodology**: Develop skills in research design, data collection, and analysis specific to pediatric nursing.
3. **Evidence-Based Practice**: Explore the latest research findings and their application in pediatric nursing.
4. **Thesis Preparation**: Formulate research questions, design studies, and develop a thesis proposal.
5. **Publication Strategies**: Understand the process of publishing pediatric nursing research in peer-reviewed journals.

Topics of Research Covered:

1. **Child Health Assessment**: Growth and development, physical and psychosocial assessment.
2. **Pediatric Illness Management**: Common pediatric conditions, symptom management, and family support.
3. **Family-Centered Care**: Collaboration with families, cultural competence, and ethical considerations.
4. **Pediatric Nursing Interventions**: Evidence-based practices, nursing protocols, and quality improvement.
5. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Pediatric Nursing: An Evidence-Based Approach” by Cecily Lynn Betz and Linda L. Lowry
2. “Wong’s Nursing Care of Infants and Children” by Marilyn J. Hockenberry and David Wilson
3. “Evidence-Based Practice in Nursing & Healthcare: A Guide to Best Practice” by Bernadette Mazurek Melnyk and Ellen Fineout-Overholt

Course Title: Medicine (Research) MD (Res) (Publications and Thesis)

Course Description:

The Medicine (Research) MD (Res) program integrates advanced research training with clinical practice. It is designed for medically qualified professionals who wish to conduct substantial research. The program allows candidates to explore empirical scientific projects relevant to clinical practice or delve into medical humanities (philosophy, history, law, arts, and social science).

Learning Objectives:

1. **Advanced Research Skills**: Develop expertise in research design, data collection, and analysis specific to medicine.
2. **Clinical Relevance**: Understand how research impacts clinical practice and patient care.
3. **Broad Research Training**: Gain knowledge in research methodology, academic writing, and related areas.
4. **Thesis Preparation**: Formulate research questions and design studies.
5. **Publication Strategies**: Learn how to publish research findings in peer-reviewed journals.

Topics of Research Covered:

1. **Empirical Scientific Projects**: Investigate relevant medical topics, such as disease mechanisms, diagnostics, and treatments.
2. **Medical Humanities Option**: Explore interdisciplinary aspects (philosophy, history, law, arts, and social science) related to medicine.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “The Lean Startup” by Eric Ries
2. “Regenerative Medicine: From Protocol to Patient” by Gustav Steinhoff and Doris A. Taylor
3. “Business Model Generation” by Alexander Osterwalder and Yves Pigneur

Course Title: Psychiatry (Publications and Thesis)

Course Description:

The PhD in Psychiatry program focuses on advanced research and teaching in psychiatry. It aims to explore the determinants of mental health conditions, their treatments, and innovative translational research. Students engage in sustained in-depth study of specific topics, fostering originality and creativity in their research.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical and research abilities.
2. **Critical Literature Examination**: Evaluate relevant background literature.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses.
4. **Broadening Knowledge**: Explore theoretical foundations and research techniques.
5. **Field of Psychiatry**: Gain expertise in the broader field of psychiatric research.

Topics of Research Covered:

1. **Empirical Scientific Projects**: Investigate mental health conditions, treatments, and mechanisms.
2. **Clinical Relevance**: Understand the impact of research on clinical practice.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “The Lean Startup” by Eric Ries
2. “Regenerative Medicine: From Protocol to Patient” by Gustav Steinhoff and Doris A. Taylor
3. “Business Model Generation” by Alexander Osterwalder and Yves Pigneur

Course Title: Clinical Dentistry (Publications and Thesis)

Course Description:

The **PhD in Clinical Dentistry** program enables you to undertake a research project that will improve understanding in the field of clinical dentistry. This 4-year PhD program allows you to combine clinical experience in various dental specialties with rigorous research training.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical and research abilities specific to clinical dentistry.

2. **Critical Literature Examination**: Evaluate relevant background literature in dentistry.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to dental practice.
4. **Broadening Knowledge**: Explore theoretical foundations and research techniques applicable to dentistry.
5. **Field of Clinical Dentistry**: Gain expertise in the broader field of dental research and practice.

Topics of Research Covered:

1. **Empirical Scientific Projects**: Investigate dental conditions, treatments, and mechanisms.
2. **Clinical Relevance**: Understand the impact of research on dental practice and patient care.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Clinical Periodontology and Implant Dentistry” by Jan Lindhe and Niklaus P. Lang
2. “Contemporary Fixed Prosthodontics” by Stephen F. Rosenstiel, Martin F. Land, and Junhei Fujimoto
3. “Evidence-Based Dentistry: An Introduction” by Allan Hackshaw

Course Title: Molecular Biology and Biotechnology (Publications and Thesis)

Course Description:

The **PhD in Molecular Biology and Biotechnology** program integrates advanced research training with molecular bioscience and biotechnological applications. It aims to explore the fundamental principles of molecular biology and their practical implications in biotechnology. Students will engage in cutting-edge research, develop expertise, and contribute to scientific advancements.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical and research abilities specific to molecular biology and biotechnology.
2. **Critical Literature Examination**: Evaluate relevant background literature in these fields.

3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to molecular processes and biotechnological applications.
4. **Broadening Knowledge**: Explore theoretical foundations and research techniques applicable to molecular biology and biotechnology.
5. **Field of Study**: Gain expertise in the broader field of molecular bioscience and its practical applications.

Topics of Research Covered:

1. **Molecular Genetics**: Investigate gene expression, regulation, and genetic variation.
2. **Biotechnological Applications**: Explore genetic engineering, protein expression, and recombinant DNA technology.
3. **Bioinformatics**: Analyze biological data using computational tools.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. "Molecular Biology of the Cell" by Bruce Alberts et al.
2. "Principles of Gene Manipulation and Genomics" by Sandy B. Primrose and Richard M. Twyman
3. "Biotechnology: Academic Cell Update Edition" by David P. Clark and Nanette J. Pazdernik

Course Title: Physiotherapy, Occupational Therapy, and Rehabilitation (Publications and Thesis)

Course Description:

The **PhD in Physiotherapy, Occupational Therapy, and Rehabilitation** program allows you to extend your body of knowledge within these fields. As an independent researcher, you'll contribute to internationally recognized research. This program is designed for those passionate about advancing clinical practice and improving patient outcomes.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical and research abilities specific to physiotherapy, occupational therapy, and rehabilitation.
2. **Critical Literature Examination**: Evaluate relevant background literature in these domains.

3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to clinical practice and patient care.
4. **Broadening Knowledge**: Explore theoretical foundations and research techniques applicable to rehabilitation sciences.
5. **Field of Study**: Gain expertise in the broader field of movement, occupational, and rehabilitation sciences.

Topics of Research Covered:

1. **Empirical Scientific Projects**: Investigate rehabilitation interventions, treatment effectiveness, and patient outcomes.
2. **Clinical Relevance**: Understand the impact of research on evidence-based practice.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. "Evidence-Based Practice in Rehabilitation" by Mary Law and Joy MacDermid
2. "Occupational Therapy for Physical Dysfunction" by Mary Vining Radomski and Catherine A. Trombly Latham
3. "Physiotherapy in Respiratory Care: An Evidence-Based Approach to Respiratory and Cardiac Management" by Alexandra Hough

Course Title: Business Administration (Publications and Thesis)

Course Description:

The **PhD in Business Administration** program combines subject-specific knowledge with rigorous research training. It equips you with the intellectual foundation to ask cutting-edge questions and conduct high-quality research under expert supervision. You have the flexibility to choose between writing a traditional dissertation monograph or following the PhD by publication format, allowing you to present your research in a way that suits your interests[1].

Learning Objectives:

1. **Research Skills Development**: Enhance critical and analytical abilities specific to business administration.
2. **Literature Examination**: Evaluate relevant background literature in business and management.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to business practices.

4. **Broadening Knowledge**: Explore theoretical foundations and research techniques applicable to business research.
5. **Field of Study**: Gain expertise in the broader field of business administration.

Topics of Research Covered:

1. **Empirical Scientific Projects**: Investigate business strategies, organizational behavior, and market dynamics.
2. **Leadership and Management**: Explore leadership theories, decision-making, and organizational performance.
3. **Entrepreneurship and Innovation**: Study entrepreneurial processes, innovation management, and startups.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. "Research Methods for Business Students" by Mark N.K. Saunders, Philip Lewis, and Adrian Thornhill
2. "The Craft of Research" by Wayne C. Booth, Gregory G. Colomb, and Joseph M. Williams
3. "Academic Writing: A Handbook for International Students" by Stephen Bailey

Course Title: Financial Engineering (Publications and Thesis)

Course Description:

The **PhD in Financial Engineering** program integrates advanced research training with financial theory and quantitative methods. It aims to explore the intersection of finance, mathematics, and computational techniques. Students will engage in cutting-edge research, develop expertise, and contribute to financial innovation.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical and quantitative abilities specific to financial engineering.
2. **Critical Literature Examination**: Evaluate relevant background literature in finance, risk management, and derivatives.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to financial models and strategies.

4. **Broadening Knowledge**: Explore theoretical foundations and research techniques applicable to financial markets.
5. **Field of Study**: Gain expertise in the broader field of financial engineering.

Topics of Research Covered:

1. **Quantitative Finance**: Investigate pricing models, risk assessment, and portfolio optimization.
2. **Derivatives and Risk Management**: Explore options, futures, swaps, and hedging strategies.
3. **Financial Data Science**: Study machine learning, time series analysis, and big data applications.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. "Options, Futures, and Other Derivatives" by John C. Hull
2. "Financial Engineering: The Evolution of a Profession" by Tanya S. Beder and Cara M. Marshall
3. "Quantitative Finance For Dummies" by Steve Bell

Course Title: Audit and Risk Management (Publications and Thesis)

Course Description:

The **PhD in Audit and Risk Management** program integrates advanced research training with the study of auditing practices and risk management strategies. It aims to explore the theoretical foundations and practical implications of auditing, internal controls, and risk assessment. Students will engage in cutting-edge research, develop expertise, and contribute to the field.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical abilities specific to auditing and risk management.
2. **Critical Literature Examination**: Evaluate relevant background literature in auditing, governance, and risk.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to audit practices and risk mitigation.

4. **Broadening Knowledge**: Explore theoretical frameworks and research techniques applicable to auditing and risk assessment.
5. **Field of Study**: Gain expertise in the broader field of audit, governance, and enterprise risk management.

Topics of Research Covered:

1. **Auditing Practices**: Investigate audit methodologies, standards, and quality assurance.
2. **Internal Controls and Compliance**: Explore risk-based auditing, control frameworks, and regulatory compliance.
3. **Risk Assessment and Mitigation**: Study risk identification, assessment models, and risk response strategies.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. "Auditing and Assurance Services" by Alvin A. Arens, Randal J. Elder, and Mark S. Beasley
2. "Enterprise Risk Management: From Incentives to Controls" by James Lam
3. "Internal Control and Risk Management: Rewriting the Rules" by Robert R. Moeller

Course Title: Health Policy and Management (Publications and Thesis)

Course Description:

The **PhD in Health Policy and Management** program integrates advanced research training with the study of health policy, organizational management, and healthcare systems. It aims to explore the theoretical foundations and practical implications of health policy decisions, healthcare delivery, and management strategies. Students will engage in cutting-edge research, develop expertise, and contribute to improving health systems.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical abilities specific to health policy and management research.
2. **Critical Literature Examination**: Evaluate relevant background literature in health policy, economics, and organizational behavior.

3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to health systems, policy implementation, and organizational effectiveness.
4. **Broadening Knowledge**: Explore theoretical frameworks and research techniques applicable to health policy and management.
5. **Field of Study**: Gain expertise in the broader field of healthcare administration and policy analysis.

Topics of Research Covered:

1. **Health Policy Analysis**: Investigate policy formulation, implementation, and evaluation.
2. **Healthcare Delivery Models**: Explore organizational structures, quality improvement, and patient safety.
3. **Health Economics**: Study cost-effectiveness, resource allocation, and financing mechanisms.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Policy Paradox: The Art of Political Decision Making” by Deborah Stone
2. “The Healthcare Handbook: How to Avoid Medical Errors, Find the Best Doctors, and Get the Most From Your Health Insurance” by Elisabeth Askin and Nathan Moore

Course Title: Economics/Econometrics (Publications and Thesis)

Course Description:

The **PhD in Economics/Econometrics** program integrates advanced research training with the study of economic theory, empirical methods, and quantitative analysis. It aims to explore theoretical foundations, econometric techniques, and their practical applications. Students will engage in cutting-edge research, develop expertise, and contribute to economic knowledge.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical abilities specific to economic research and econometrics.
2. **Critical Literature Examination**: Evaluate relevant background literature in economics and econometric theory.

3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to economic models and data analysis.
4. **Broadening Knowledge**: Explore theoretical frameworks and research techniques applicable to economic and financial data.
5. **Field of Study**: Gain expertise in the broader field of economics and econometrics.

Topics of Research Covered:

1. **Microeconomic Theory**: Investigate consumer behavior, market structures, and game theory.
2. **Macroeconomic Models**: Explore economic growth, business cycles, and monetary policy.
3. **Applied Econometrics**: Study regression analysis, time series, and panel data methods.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. "Microeconomic Theory" by Andreu Mas-Colell, Michael D. Whinston, and Jerry R. Green
2. "Time Series Analysis" by James D. Hamilton
3. "Econometric Analysis" by William H. Greene

Course Title: Management Information Systems (Publications and Thesis)

Course Description:

The **PhD in Management Information Systems** program integrates advanced research training with the study of information systems, technology, and their impact on organizations. It aims to explore theoretical foundations, empirical methods, and practical implications. Students will engage in cutting-edge research, develop expertise, and contribute to the field of MIS.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical abilities specific to MIS research.
2. **Critical Literature Examination**: Evaluate relevant background literature in information systems, organizational behavior, and technology.

3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to technology adoption, system design, and organizational performance.
4. **Broadening Knowledge**: Explore theoretical frameworks and research techniques applicable to MIS.
5. **Field of Study**: Gain expertise in the broader field of management information systems.

Topics of Research Covered:

1. **Technology Adoption and Implementation**: Investigate factors influencing technology adoption, change management, and system implementation.
2. **Data Analytics and Business Intelligence**: Explore data-driven decision-making, predictive modeling, and data visualization.
3. **Cybersecurity and Privacy**: Study information security, risk management, and privacy concerns.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Information Systems: A Manager’s Guide to Harnessing Technology” by John Gallaugher
2. “Management Information Systems” by Kenneth C. Laudon and Jane P. Laudon
3. “Business Process Change: A Business Process Management Guide for Managers and Process Professionals” by Paul Harmon

Course Title: Data Analytics/Big Data Analytics (Publications and Thesis)

Course Description:

The **PhD in Data Analytics/Big Data Analytics** program integrates advanced research training with the study of data science, statistical modeling, and large-scale data processing. It aims to explore theoretical foundations, practical techniques, and their applications in handling massive datasets. Students will engage in cutting-edge research, develop expertise, and contribute to the field of data analytics.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical abilities specific to data analytics and big data research.

2. **Critical Literature Examination**: Evaluate relevant background literature in data science, machine learning, and statistical methods.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to data modeling, predictive analytics, and data-driven decision-making.
4. **Broadening Knowledge**: Explore theoretical frameworks and research techniques applicable to large-scale data analysis.
5. **Field of Study**: Gain expertise in the broader field of data analytics and its impact on various domains.

Topics of Research Covered:

1. **Statistical Modeling**: Investigate regression analysis, time series, and multivariate methods.
2. **Machine Learning Algorithms**: Explore supervised and unsupervised learning, deep learning, and ensemble techniques.
3. **Big Data Processing**: Study distributed computing frameworks (e.g., Hadoop, Spark) and cloud-based analytics.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “The Art of Data Science” by Roger D. Peng and Elizabeth Matsui
2. “Pattern Recognition and Machine Learning” by Christopher Bishop
3. “Big Data: A Revolution That Will Transform How We Live, Work, and Think” by Viktor Mayer-Schönberger and Kenneth Cukier

Course Title: Digital Marketing and Media/Marketing Management (Publications and Thesis)

Course Description:

The **PhD in Digital Marketing and Media/Marketing Management** program integrates advanced research training with the study of marketing strategies, digital media, and their impact on organizations. It aims to explore theoretical foundations, practical techniques, and their applications in the ever-evolving digital landscape. Students will engage in cutting-edge research, develop expertise, and contribute to the field of marketing.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical abilities specific to marketing research, digital media, and consumer behavior.
2. **Critical Literature Examination**: Evaluate relevant background literature in marketing, advertising, and media studies.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to marketing strategies, digital campaigns, and brand management.
4. **Broadening Knowledge**: Explore theoretical frameworks and research techniques applicable to marketing in the digital age.
5. **Field of Study**: Gain expertise in the broader field of marketing management and media communication.

Topics of Research Covered:

1. **Digital Marketing Strategies**: Investigate online advertising, social media marketing, and content optimization.
2. **Consumer Insights and Behavior**: Explore user engagement, customer journey mapping, and data-driven decision-making.
3. **Brand Management and Reputation**: Study brand equity, reputation management, and crisis communication.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Digital Marketing Analytics: Making Sense of Consumer Data in a Digital World” by Chuck Hemann and Ken Burbary
2. “Marketing Management” by Philip Kotler and Kevin Lane Keller
3. “The Art of SEO: Mastering Search Engine Optimization” by Eric Enge, Rand Fishkin, and Jessie Stricchiola

Course Title: Operations Research (Publications and Thesis)

Course Description:

The **PhD in Operations Research** program integrates advanced research training with the study of mathematical modeling, optimization, and decision-making. It aims to explore theoretical foundations, practical techniques, and their applications in solving complex

problems. Students will engage in cutting-edge research, develop expertise, and contribute to the field of operations research.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical abilities specific to operations research and mathematical optimization.
2. **Critical Literature Examination**: Evaluate relevant background literature in optimization theory, algorithms, and decision science.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to modeling, simulation, and system analysis.
4. **Broadening Knowledge**: Explore theoretical frameworks and research techniques applicable to operations research.
5. **Field of Study**: Gain expertise in the broader field of optimization, logistics, and supply chain management.

Topics of Research Covered:

1. **Linear and Nonlinear Programming**: Investigate optimization models, duality, and sensitivity analysis.
2. **Stochastic Models**: Explore probabilistic methods, queuing theory, and simulation.
3. **Network Optimization**: Study transportation, assignment, and network flow problems.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Introduction to Operations Research” by Frederick S. Hillier and Gerald J. Lieberman
2. “Network Flows: Theory, Algorithms, and Applications” by Ravindra K. Ahuja, Thomas L. Magnanti, and James B. Orlin
3. “Simulation Modeling and Analysis” by Averill M. Law and W. David Kelton

Course Title: Human Resource Management (Publications and Thesis)

Course Description:

The **PhD in Human Resource Management** program integrates advanced research training with the study of HRM practices, organizational behavior, and workforce dynamics. It aims to

explore theoretical foundations, empirical methods, and practical implications. Students will engage in cutting-edge research, develop expertise, and contribute to the field of HRM.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical abilities specific to HRM research and organizational studies.
2. **Critical Literature Examination**: Evaluate relevant background literature in HRM, employment relations, and talent management.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to HR practices, employee engagement, and organizational performance.
4. **Broadening Knowledge**: Explore theoretical frameworks and research techniques applicable to HRM.
5. **Field of Study**: Gain expertise in the broader field of human resource management and organizational behavior.

Topics of Research Covered:

1. **Strategic HRM**: Investigate alignment of HR practices with organizational goals.
2. **Employee Engagement and Well-being**: Explore motivation, job satisfaction, and work-life balance.
3. **Diversity and Inclusion**: Study workforce diversity, equity, and inclusion initiatives.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Human Resource Management: Theory and Practice” by John Bratton and Jeffrey Gold
2. “Strategic Human Resource Management” by Paul Boselie, Cary L. Cooper, and Ronald J. Burke
3. “Employee Engagement: A Roadmap for Creating Profits, Optimizing Performance, and Increasing Loyalty” by Brad Federman

Course Title: Digital Transformation Management (Publications and Thesis)

Course Description:

The **PhD in Digital Transformation Management** program integrates advanced research training with the study of digital transformation strategies, organizational change, and technology adoption. It aims to explore theoretical foundations, practical techniques, and their applications in navigating the digital landscape. Students will engage in cutting-edge research, develop expertise, and contribute to the field of digital transformation.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical abilities specific to digital transformation research and organizational studies.
2. **Critical Literature Examination**: Evaluate relevant background literature in digital strategy, innovation, and change management.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to digital adoption, business models, and organizational performance.
4. **Broadening Knowledge**: Explore theoretical frameworks and research techniques applicable to digital transformation.
5. **Field of Study**: Gain expertise in the broader field of managing digital change and innovation.

Topics of Research Covered:

1. **Digital Strategy and Leadership**: Investigate strategic alignment, digital maturity, and leadership in the digital age.
2. **Innovation and Disruption**: Explore technological innovations, ecosystem dynamics, and disruptive business models.
3. **Change Management and Organizational Agility**: Study change processes, agility frameworks, and adaptive cultures.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Leading Digital: Turning Technology into Business Transformation” by George Westerman, Didier Bonnet, and Andrew McAfee
2. “The Innovator’s Dilemma: When New Technologies Cause Great Firms to Fail” by Clayton M. Christensen
3. “The Lean Startup: How Today’s Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses” by Eric Ries

Course Title: Project Management (Publications and Thesis)

Course Description:

The **PhD in Project Management** program integrates advanced research training with the study of project management practices, organizational dynamics, and strategic planning. It aims to explore theoretical foundations, empirical methods, and practical implications. Students will engage in cutting-edge research, develop expertise, and contribute to the field of project management.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical abilities specific to project management research and organizational studies.
2. **Critical Literature Examination**: Evaluate relevant background literature in project management, leadership, and stakeholder engagement.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to project success factors, risk management, and project governance.
4. **Broadening Knowledge**: Explore theoretical frameworks and research techniques applicable to project management.
5. **Field of Study**: Gain expertise in the broader field of managing complex projects and programs.

Topics of Research Covered:

1. **Project Leadership and Team Dynamics**: Investigate leadership styles, team collaboration, and conflict resolution.
2. **Risk Management and Decision Analysis**: Explore risk assessment, mitigation strategies, and decision-making under uncertainty.
3. **Project Governance and Stakeholder Management**: Study governance models, stakeholder engagement, and project ethics.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “A Guide to the Project Management Body of Knowledge (PMBOK® Guide)” by Project Management Institute (PMI)
2. “Effective Project Management: Traditional, Agile, Extreme” by Robert K. Wysocki

3. “Project Management: A Systems Approach to Planning, Scheduling, and Controlling” by Harold Kerzner

Course Title: International Business Management (Publications and Thesis)

Course Description:

The **PhD in International Business Management** program integrates advanced research training with the study of critical developments in international business and organizations’ strategic responses. It aims to explore theoretical foundations, empirical methods, and practical implications. Students will engage in cutting-edge research, develop expertise, and contribute to the field of international business.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical abilities specific to international business research and organizational studies.
2. **Critical Literature Examination**: Evaluate relevant background literature in international business, strategy, and cross-cultural management.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to global market entry, multinational corporations, and internationalization strategies.
4. **Broadening Knowledge**: Explore theoretical frameworks and research techniques applicable to managing global business operations.
5. **Field of Study**: Gain expertise in the broader field of international business management.

Topics of Research Covered:

1. **Global Strategy and Market Entry**: Investigate entry modes (e.g., export, joint ventures, acquisitions), competitive advantage, and global value chains.
2. **Cross-Cultural Management**: Explore cultural dimensions, expatriate management, and intercultural communication.
3. **International Human Resource Management**: Study talent acquisition, development, and retention in a global context.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Global Strategy” by Mike W. Peng
2. “International Business: Competing in the Global Marketplace” by Charles W. L. Hill and G. Tomas M. Hult
3. “Cross-Cultural Management: Essential Concepts” by David C. Thomas and Mark F. Peterson

Course Title: Supply Chain Management and Logistics (Publications and Thesis)

Course Description:

The **PhD in Supply Chain Management and Logistics** program integrates advanced research training with the study of supply chain practices, logistics operations, and strategic management. It aims to explore theoretical foundations, empirical methods, and practical implications. Students will engage in cutting-edge research, develop expertise, and contribute to the field of supply chain management.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical abilities specific to supply chain research and organizational studies.
2. **Critical Literature Examination**: Evaluate relevant background literature in supply chain management, transportation, and inventory control.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to logistics optimization, demand forecasting, and sustainability.
4. **Broadening Knowledge**: Explore theoretical frameworks and research techniques applicable to managing global supply networks.
5. **Field of Study**: Gain expertise in the broader field of supply chain management and logistics.

Topics of Research Covered:

1. **Logistics Operations**: Investigate transportation modes, warehousing, and distribution networks.
2. **Inventory Management**: Explore inventory control models, demand variability, and safety stock strategies.
3. **Sustainable Supply Chains**: Study environmental impact, circular economy, and green logistics.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%
- **Thesis Defense**: 30%

- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Designing and Managing the Supply Chain: Concepts, Strategies, and Case Studies” by David Simchi-Levi, Philip Kaminsky, and Edith Simchi-Levi
2. “Logistics and Supply Chain Management” by Martin Christopher
3. “Sustainable Logistics and Supply Chain Management: Principles and Practices for Sustainable Operations and Management” by David B. Grant and Alexander Trautrims

Course Title: Actuarial Science (Publications and Thesis)

Course Description:

The **PhD in Actuarial Science** program integrates advanced research training with the study of actuarial practices, risk management, and mathematical modeling. It aims to explore theoretical foundations, empirical methods, and practical implications. Students will engage in cutting-edge research, develop expertise, and contribute to the field of actuarial science.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical abilities specific to actuarial research and mathematical modeling.
2. **Critical Literature Examination**: Evaluate relevant background literature in actuarial science, insurance, and financial risk.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to risk assessment, pricing models, and financial stability.
4. **Broadening Knowledge**: Explore theoretical frameworks and research techniques applicable to actuarial practice.
5. **Field of Study**: Gain expertise in the broader field of actuarial science and risk analysis.

Topics of Research Covered:

1. **Risk Modeling and Assessment**: Investigate stochastic processes, mortality tables, and longevity risk.
2. **Insurance Pricing and Reserving**: Explore premium calculations, loss reserving, and solvency analysis.
3. **Financial Risk Management**: Study investment strategies, portfolio optimization, and capital allocation.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%
- **Research Presentation**: 15%

- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “Actuarial Mathematics for Life Contingent Risks” by David C. M. Dickson, Mary R. Hardy, and Howard R. Waters
2. “Stochastic Calculus for Finance II: Continuous-Time Models” by Steven E. Shreve
3. “Risk Management and Insurance” by Scott E. Harrington and Gregory R. Niehaus

Course Title: Learning Science and Technology (Publications and Thesis)

Course Description:

The **PhD in Learning Science and Technology** program integrates advanced research training with the study of learning theories, educational technology, and instructional design. It aims to explore theoretical foundations, empirical methods, and practical implications for enhancing learning experiences. Students will engage in cutting-edge research, develop expertise, and contribute to the field of learning science.

Learning Objectives:

1. **Research Skills Development**: Enhance analytical abilities specific to learning science research and technology-enhanced learning (TEL).
2. **Critical Literature Examination**: Evaluate relevant background literature in educational psychology, instructional design, and digital learning.
3. **Hypothesis Testing and Experimentation**: Develop and test hypotheses related to pedagogical innovations, learner engagement, and educational outcomes.
4. **Broadening Knowledge**: Explore theoretical frameworks and research techniques applicable to learning science and technology.
5. **Field of Study**: Gain expertise in the broader field of educational technology and evidence-based instructional practices.

Topics of Research Covered:

1. **Cognitive Learning Theories**: Investigate memory, attention, and metacognition in learning.
2. **Digital Learning Environments**: Explore adaptive learning, personalized instruction, and online assessment.
3. **Educational Data Analytics**: Study learning analytics, formative assessment, and feedback mechanisms.
4. **Thesis Research**: Individual projects under faculty supervision.

Assessment:

- **Thesis Proposal**: 20%
- **Literature Review**: 15%

- **Research Presentation**: 15%
- **Thesis Defense**: 30%
- **Class Participation and Engagement**: 20%

Recommended Reading:

1. “How People Learn: Brain, Mind, Experience, and School” by John D. Bransford, Ann L. Brown, and Rodney R. Cocking
2. “Design for How People Learn” by Julie Dirksen
3. “Learning Analytics: Measurement Innovations to Support Student Success” by John P. Campbell and Diana G. Oblinger

Course Title: Inclusive Education (Publications and Thesis)

Course Description:

This course explores the intersection of inclusive education, research, and scholarly writing. Students will engage in advanced study related to inclusive practices, equity, and diversity in educational settings. The course emphasizes critical analysis, synthesis of existing literature, and original research.

Learning Objectives:

1. **Understand Inclusive Education:** Explore theoretical frameworks, historical perspectives, and contemporary issues related to inclusive education.
2. **Research Skills Development:** Develop advanced research skills, including literature review, data collection, and analysis.
3. **Thesis Preparation:** Learn how to formulate research questions, design studies, and prepare a thesis proposal.
4. **Scholarly Writing:** Enhance scholarly writing skills, including proper citation, academic conventions, and effective communication.

Topics of Research Covered:

- Inclusive pedagogy and curriculum design
- Accessibility and accommodations for diverse learners
- Intersectionality and social justice in education
- Teacher training and professional development
- Inclusive assessment practices

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project.
- **Literature Review:** A comprehensive literature review related to inclusive education.
- **Oral Presentation:** Presenting research findings and defending the proposal.

- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Booth, T., & Ainscow, M. (2011). *Index for Inclusion: Developing Learning and Participation in Schools.* Routledge.
2. Florian, L., & Black-Hawkins, K. (2011). *Exploring Inclusive Pedagogy.* Routledge.
3. Thomas, G., & Loxley, A. (2007). *Deconstructing Special Education and Constructing Inclusion.* McGraw-Hill Education.

Course Title: Special Needs Education (Publications and Thesis)

Course Description:

This course delves into the multifaceted field of special needs education, focusing on research, scholarly writing, and inclusive practices. Students will explore the experiences of individuals with hidden disabilities, such as Autism or ADHD, within mainstream educational settings. The course emphasizes critical analysis, original research, and the intersection of social policy and individual biography.

Learning Objectives:

1. **Understanding Hidden Disabilities:** Investigate the emergence and impact of hidden disabilities in educational contexts.
2. **Research Skills Development:** Develop advanced research skills, including data collection, analysis, and synthesis.
3. **Thesis Preparation:** Learn how to formulate research questions, design studies, and prepare a thesis proposal.
4. **Inclusive Practices:** Explore strategies for fostering inclusive environments and supporting diverse learners.

Topics of Research Covered:

- **Autism Spectrum Disorders (ASD):** Theoretical frameworks, interventions, and educational approaches.
- **Attention-Deficit/Hyperactivity Disorder (ADHD):** Understanding challenges and effective support strategies.
- **Inclusion and Equity:** Examining policies, practices, and social justice in special education.
- **Transition to Adulthood:** Supporting students with special needs during critical life transitions.

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project.
- **Literature Review:** A comprehensive review of relevant literature in the field.
- **Oral Presentation:** Presenting research findings and defending the proposal.

- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Forster, E. C. (2012)*Young People with Special Educational Needs' Experiences of School and the Transition to Adulthood.*
2. Almughyiri, S. (2020)*Perceptions of Preservice Teachers of Students with Autism and Intellectual Disabilities in their Teacher Preparation Programs in Saudi Arabia.*
3. Additional readings based on specific research interests and topics.

Course Title: Physical Sciences/Physics (Publications and Thesis)

Course Description:

This course delves into advanced topics in physics research, scholarly writing, and scientific communication. Students will engage in original investigations, explore cutting-edge methodologies, and contribute to the field's knowledge base. The course emphasizes rigorous analysis, critical thinking, and effective scientific writing.

Learning Objectives:

1. **Research Excellence:** Develop expertise in a specialized area of physics research.
2. **Methodology Mastery:** Acquire advanced research skills, including data collection, analysis, and modeling.
3. **Thesis Preparation:** Learn how to formulate research questions, design experiments, and prepare a thesis proposal.
4. **Effective Communication:** Enhance scientific communication skills through presentations and scholarly writing.

Topics of Research Covered:

- **Quantum Mechanics:** Foundations, applications, and emerging trends.
- **Particle Physics:** High-energy physics, particle interactions, and collider experiments.
- **Condensed Matter Physics:** Materials science, superconductivity, and nanomaterials.
- **Astrophysics and Cosmology:** Stellar evolution, dark matter, and cosmic microwave background.

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project.
- **Literature Review:** A comprehensive review of relevant literature in the chosen research area.
- **Oral Defense:** Presenting research findings and defending the proposal.
- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Feynman, R. P., Leighton, R. B., & Sands, M. (2011). *The Feynman Lectures on Physics.* Addison-Wesley.
2. Griffiths, D. J. (2017). *Introduction to Quantum Mechanics.* Cambridge University Press.
3. Peskin, M. E., & Schroeder, D. V. (1995). *An Introduction to Quantum Field Theory.* Westview Press.

Course Title: Biological Sciences/Chemistry (Publications and Thesis)

Course Description:

This interdisciplinary course bridges the fields of biological sciences and chemistry, focusing on advanced research, scholarly writing, and scientific communication. Students will explore cutting-edge topics, conduct original investigations, and contribute to scientific knowledge. The course emphasizes critical analysis, experimental design, and effective communication.

Learning Objectives:

1. **Research Excellence:** Develop expertise in a specialized area of biological sciences or chemistry research.
2. **Methodology Mastery:** Acquire advanced research skills, including experimental techniques, data analysis, and modeling.
3. **Thesis Preparation:** Learn how to formulate research questions, design experiments, and prepare a thesis proposal.
4. **Scientific Communication:** Enhance skills in presenting research findings through oral presentations and scholarly writing.

Topics of Research Covered:

- **Biochemistry and Molecular Biology:** Protein structure, enzymology, and nucleic acid interactions.
- **Cell Biology and Genetics:** Cellular processes, gene regulation, and genetic variation.
- **Chemical Biology:** Chemical approaches to biological questions, drug discovery, and chemical synthesis.
- **Biophysical Chemistry:** Spectroscopy, thermodynamics, and biomolecular interactions.

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project.
- **Literature Review:** A comprehensive review of relevant literature in the chosen research area.
- **Oral Defense:** Presenting research findings and defending the proposal.
- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Berg, J. M., Tymoczko, J. L., & Stryer, L. (2015). *Biochemistry.* W. H. Freeman.
2. Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., & Walter, P. (2014). *Molecular Biology of the Cell.* Garland Science.
3. Cramer, C. J., & Truhlar, D. G. (Eds.). (2015). *Computational Chemistry.* Wiley.

Course Title: Computer Science Education (Publications and Thesis)

Course Description:

This interdisciplinary course bridges computer science and education, focusing on advanced research, scholarly writing, and pedagogical practices. Students will explore innovative approaches to teaching computer science, evaluate educational technologies, and contribute to the field's knowledge base. The course emphasizes critical analysis, curriculum design, and effective communication.

Learning Objectives:

1. **Research Excellence in Education:** Develop expertise in computer science education research, including understanding learning theories, instructional design, and assessment.
2. **Methodology Mastery:** Acquire advanced research skills, such as qualitative and quantitative methods for studying educational practices.
3. **Thesis Preparation:** Learn how to formulate research questions, design studies, and prepare a thesis proposal related to computer science education.
4. **Effective Teaching Strategies:** Explore evidence-based teaching practices, student engagement, and curriculum development.

Topics of Research Covered:

- **Pedagogical Approaches:** Active learning, flipped classrooms, project-based learning.
- **Assessment and Evaluation:** Designing effective assessments, measuring learning outcomes.
- **Diversity and Inclusion:** Addressing gender, cultural, and socioeconomic diversity in computer science education.
- **Educational Technology:** Integrating tools, platforms, and online resources for teaching.

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project related to computer science education.
- **Literature Review:** A comprehensive review of relevant literature in the chosen research area.

- **Teaching Portfolio:** Developing a portfolio that showcases effective teaching practices.
- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Lister, R., Adams, E., Fitzgerald, S., Fone, W., Hamer, J., Lindholm, M., … & Simon, B. (2006)*A multi-national study of reading and tracing skills in novice programmers.*
2. Guzdial, M., & Ericson, B. (2009)*Media computation: Teaching in a new media age.*
3. Additional readings based on specific research interests and topics.

Course Title: Medical Education (Publications and Thesis)

Course Description:

This interdisciplinary course focuses on advanced research in medical education, scholarly writing, and pedagogical practices. Students will explore innovative approaches to teaching medical professionals, evaluate educational strategies, and contribute to the field's knowledge base. The course emphasizes critical analysis, curriculum design, and effective communication.

Learning Objectives:

1. **Research Excellence in Medical Education:** Develop expertise in medical education research, including understanding learning theories, instructional design, and assessment.
2. **Methodology Mastery:** Acquire advanced research skills, such as qualitative and quantitative methods for studying educational practices in healthcare.
3. **Thesis Preparation:** Learn how to formulate research questions, design studies, and prepare a thesis proposal related to medical education.
4. **Effective Teaching Strategies:** Explore evidence-based teaching practices for medical professionals.

Topics of Research Covered:

- **Curriculum Development:** Designing medical education programs, competency-based learning, and interprofessional education.
- **Assessment and Evaluation:** Developing effective assessment tools, measuring clinical competence, and evaluating educational outcomes.
- **Faculty Development:** Supporting educators in medical schools and clinical settings.
- **Patient-Centered Education:** Enhancing communication skills, empathy, and patient-centered care.

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project related to medical education.

- **Literature Review:** A comprehensive review of relevant literature in the chosen research area.
- **Teaching Portfolio:** Developing a portfolio that showcases effective teaching practices in medical education.
- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Harden, R. M., & Laidlaw, J. M. (Eds.). (2017). *Essential Skills for a Medical Teacher: An Introduction to Teaching and Learning in Medicine.* Elsevier.
2. Swanwick, T. (Ed.). (2014). *Understanding Medical Education: Evidence, Theory, and Practice.* Wiley-Blackwell.
3. Additional readings based on specific research interests and topics.

Course Title: Policy and Management (Publications and Thesis)

Course Description:

The PhD program in Policy and Management offers an exciting opportunity for independent research in the field of public policy, governance, and organizational management. Students will work alongside specialists conducting cutting-edge research. The program emphasizes critical analysis, policy formulation, and effective management practices.

Learning Objectives:

1. **Research Excellence in Policy Studies:** Develop expertise in policy analysis, evaluation, and implementation.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods.
3. **Thesis Preparation:** Learn how to formulate research questions, design studies, and prepare a thesis proposal.
4. **Organizational Leadership:** Explore effective management strategies, leadership development, and decision-making.

Topics of Research Covered:

- **Public Policy Analysis:** Examining policy formulation, impact assessment, and policy evaluation.
- **Governance and Public Administration:** Understanding government structures, bureaucracy, and public service delivery.
- **Organizational Behavior:** Investigating leadership, organizational culture, and change management.
- **Strategic Management:** Aligning organizational goals with policy objectives.

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project.

- **Literature Review:** A comprehensive review of relevant literature in the chosen research area.
- **Oral Defense:** Presenting research findings and defending the proposal.
- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Bardach, E. (2012). *A Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem Solving.* CQ Press.
2. Mintzberg, H., Ahlstrand, B., & Lampel, J. (2009). *Strategy Safari: A Guided Tour Through the Wilds of Strategic Management.* Free Press.
3. Additional readings based on specific research interests and topics.

Course Title: Mathematics (Publications and Thesis)

Course Description:

The PhD program in Mathematics offers an opportunity for independent research in various mathematical fields. Students will work alongside specialists, engage in rigorous analysis, and contribute to the advancement of mathematical knowledge. The course emphasizes critical thinking, problem-solving, and scholarly writing.

Learning Objectives:

1. **Research Excellence in Mathematics:** Develop expertise in a specialized area of mathematics research.
2. **Methodology Mastery:** Acquire advanced research skills, including both qualitative and quantitative methods.
3. **Thesis Preparation:** Learn how to formulate research questions, design studies, and prepare a thesis proposal.
4. **Mathematical Communication:** Enhance skills in presenting research findings through scholarly writing.

Topics of Research Covered:

- **Pure Mathematics:** Abstract algebra, number theory, topology, and mathematical logic.
- **Applied Mathematics:** Differential equations, numerical analysis, and mathematical modeling.
- **Mathematical Physics:** Quantum mechanics, statistical mechanics, and mathematical methods in physics.

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project.
- **Literature Review:** A comprehensive review of relevant literature in the chosen research area.

- **Oral Defense:** Presenting research findings and defending the proposal.
- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Hardy, G. H., & Wright, E. M. (2008). *An Introduction to the Theory of Numbers.* Oxford University Press.
2. Strang, G. (2006). *Linear Algebra and Its Applications.* Cengage Learning.
3. Additional readings based on specific research interests and topics.

Course Title: Educational Technology (Publications and Thesis)

Course Description:

The PhD program in Educational Technology is a three-year full-time program for students who already have a recognized Research Masters qualification in a relevant area. This program, offered by The Open University's Institute of Educational Technology (IET), provides a stimulating and inclusive environment for research study in the following areas:

- Technology-enhanced learning
- Online and distance learning
- Mobile and game-based learning
- Learning analytics
- Learning design
- Design of learning technologies
- Higher Education policy and practice

Learning Objectives:

1. **Research Excellence in Educational Technology:** Develop expertise in a specialized area of educational technology research.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods.
3. **Thesis Preparation:** Learn how to formulate research questions, design studies, and prepare a thesis proposal.
4. **Scholarly Communication:** Enhance skills in presenting research findings through scholarly writing.

Topics of Research Covered:

- **Technology-Enhanced Learning:** Investigating innovative uses of technology in education.
- **Learning Analytics:** Analyzing data to improve learning outcomes.
- **Mobile and Game-Based Learning:** Exploring mobile apps, serious games, and gamification.

- **Learning Design:** Designing effective learning experiences.
- **Higher Education Policy and Practice:** Examining policies and practices in universities and colleges.

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project.
- **Literature Review:** A comprehensive review of relevant literature in the chosen research area.
- **Oral Defense:** Presenting research findings and defending the proposal.
- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Conole, G., & Dyke, M. (Eds.). (2014). *Researching Learning in Virtual Worlds.* Springer.
2. Siemens, G., & Long, P. (Eds.). (2011). *Penetrating the Fog: Analytics in Learning and Education.* Athabasca University Press.
3. Additional readings based on specific research interests and topics.

Course Title: Language Education (Publications and Thesis)

Course Description:

The PhD program in Language Education focuses on advanced research in language teaching, learning, and pedagogy. Students will engage in scholarly writing, explore innovative approaches to language education, and contribute to the field's knowledge base. The course emphasizes critical analysis, curriculum design, and effective communication.

Learning Objectives:

1. **Research Excellence in Language Education:** Develop expertise in a specialized area of language education research.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods.
3. **Thesis Preparation:** Learn how to formulate research questions, design studies, and prepare a thesis proposal.
4. **Effective Teaching Strategies:** Explore evidence-based practices for language educators.

Topics of Research Covered:

- **Second Language Acquisition:** Investigating factors affecting language learning, learner motivation, and language proficiency.
- **Curriculum Design:** Designing effective language programs, materials, and assessments.

- **Multilingualism and Language Policy:** Examining language policies, bilingual education, and language planning.
- **Technology-Enhanced Language Learning:** Exploring digital tools, online resources, and blended learning.

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project.
- **Literature Review:** A comprehensive review of relevant literature in the chosen research area.
- **Oral Defense:** Presenting research findings and defending the proposal.
- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Ellis, R. (2008). *The Study of Second Language Acquisition.* Oxford University Press.
2. Richards, J. C., & Rodgers, T. S. (2014). *Approaches and Methods in Language Teaching.* Cambridge University Press.
3. Additional readings based on specific research interests and topics.

Course Title: Curriculum and Instruction (Publications and Thesis)

Course Description:

The PhD program in Curriculum and Instruction provides an opportunity for independent research in the field of education. Students will work closely with supervisors to develop their own research projects, contributing to the knowledge base within educational and social sciences. The course emphasizes critical analysis, curriculum design, and effective instructional practices.

Learning Objectives:

1. **Research Excellence in Education:** Develop expertise in a specialized area of curriculum and instruction research.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods.
3. **Thesis Preparation:** Learn how to formulate research questions, design studies, and prepare a thesis proposal.
4. **Effective Teaching Strategies:** Explore evidence-based practices for curriculum development and instructional design.

Topics of Research Covered:

- **Curriculum Design:** Investigating curriculum frameworks, alignment, and assessment.
- **Instructional Strategies:** Exploring pedagogical approaches, technology integration, and differentiated instruction.

- **Educational Policy:** Examining policy implications on curriculum development and implementation.
- **Teacher Professional Development:** Supporting educators in enhancing instructional practices.

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project.
- **Literature Review:** A comprehensive review of relevant literature in the chosen research area.
- **Oral Defense:** Presenting research findings and defending the proposal.
- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Wiggins, G., & McTighe, J. (2005). *Understanding by Design.* ASCD.
2. Tomlinson, C. A. (2014). *The Differentiated Classroom: Responding to the Needs of All Learners.* ASCD.
3. Additional readings based on specific research interests and topics.

Course Title: Higher Education Administration (Publications and Thesis)

Course Description:

The PhD program in Higher Education Administration provides an opportunity for independent research in the field of higher education leadership, policy, and management. Students will engage in scholarly writing, explore innovative approaches to administration, and contribute to the knowledge base within the higher education sector. The course emphasizes critical analysis, organizational leadership, and effective decision-making.

Learning Objectives:

1. **Research Excellence in Higher Education Administration:** Develop expertise in a specialized area of higher education research related to administration, governance, and leadership.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods.
3. **Thesis Preparation:** Learn how to formulate research questions, design studies, and prepare a thesis proposal.
4. **Effective Administrative Practices:** Explore evidence-based strategies for managing institutions of higher education.

Topics of Research Covered:

- **Higher Education Policy and Governance:** Investigating policies, regulations, and institutional structures.
- **Leadership and Change Management:** Examining leadership styles, organizational culture, and strategic planning.
- **Student Affairs and Services:** Addressing student support, campus life, and student success initiatives.
- **Financial Management and Resource Allocation:** Analyzing budgeting, fundraising, and resource optimization.

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project.
- **Literature Review:** A comprehensive review of relevant literature in the chosen research area.
- **Oral Defense:** Presenting research findings and defending the proposal.
- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Kezar, A., & Eckel, P. (Eds.). (2017). *Advancing Higher Education: New Strategies for Leadership and Organizational Change.* Johns Hopkins University Press.
2. Birnbaum, R. (1988). *How Colleges Work: The Cybernetics of Academic Organization and Leadership.* Jossey-Bass.
3. Additional readings based on specific research interests and topics.

Course Title: Educational Psychology (Publications and Thesis)

Course Description:

The PhD program in Educational Psychology provides an opportunity for independent research in the field of psychology applied to education. Students will engage in scholarly writing, explore innovative approaches to understanding learning and development, and contribute to the knowledge base within educational contexts. The course emphasizes critical analysis, research methodology, and practical applications.

Learning Objectives:

1. **Research Excellence in Educational Psychology:** Develop expertise in a specialized area of educational psychology research.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods.
3. **Thesis Preparation:** Learn how to formulate research questions, design studies, and prepare a thesis proposal.

4. **Applied Educational Psychology:** Explore evidence-based practices for improving teaching, learning, and student well-being.

Topics of Research Covered:

- **Cognitive Development:** Investigating cognitive processes, memory, and problem-solving.
- **Social and Emotional Development:** Understanding social interactions, motivation, and emotional regulation.
- **Learning Theories:** Examining behaviorism, constructivism, and socio-cultural perspectives.
- **Assessment and Intervention:** Applying psychological assessments and designing effective interventions.

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project.
- **Literature Review:** A comprehensive review of relevant literature in the chosen research area.
- **Oral Defense:** Presenting research findings and defending the proposal.
- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Woolfolk, A. E. (2019). *Educational Psychology.* Pearson.
2. Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes.* Harvard University Press.
3. Additional readings based on specific research interests and topics.

Course Title: Sports Psychology (Publications and Thesis)

Course Description:

The PhD program in Sports Psychology focuses on advanced research related to psychological factors influencing athletic performance, coaching, and sports management. Students will engage in scholarly writing, explore innovative approaches to mental training, and contribute to the knowledge base within the field of sports psychology. The course emphasizes critical analysis, applied interventions, and evidence-based practices.

Learning Objectives:

1. **Research Excellence in Sports Psychology:** Develop expertise in a specialized area of sports psychology research.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods.
3. **Thesis Preparation:** Learn how to formulate research questions, design studies, and prepare a thesis proposal.

4. **Applied Sport Psychology:** Explore evidence-based strategies for enhancing athletic performance, mental resilience, and well-being.

Topics of Research Covered:

- **Psychological Skills Training:** Investigating techniques such as goal setting, imagery, and self-talk.
- **Athlete Motivation and Behavior:** Understanding intrinsic and extrinsic motivation, adherence, and burnout.
- **Performance Anxiety and Stress Management:** Examining stressors, coping strategies, and relaxation techniques.
- **Coaching and Leadership Psychology:** Analyzing effective coaching styles, team dynamics, and leadership development.

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project.
- **Literature Review:** A comprehensive review of relevant literature in the chosen research area.
- **Oral Defense:** Presenting research findings and defending the proposal.
- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Weinberg, R. S., & Gould, D. (2019). *Foundations of Sport and Exercise Psychology.* Human Kinetics.
2. Hardy, L., Jones, G., & Gould, D. (Eds.). (2018). *Understanding and Managing Performance Anxiety in Sport: A Comprehensive Guide.* Routledge.
3. Additional readings based on specific research interests and topics.

Course Title: Education Research (Publications and Thesis)

Course Description:

The PhD program in Education Research provides an opportunity for independent research in the field of education. Students will engage in scholarly writing, explore innovative approaches to understanding learning and development, and contribute to the knowledge base within educational contexts. The course emphasizes critical analysis, research methodology, and practical applications.

Learning Objectives:

1. **Research Excellence in Education:** Develop expertise in a specialized area of education research.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods.

3. **Thesis Preparation:** Learn how to formulate research questions, design studies, and prepare a thesis proposal.
4. **Applied Educational Research:** Explore evidence-based strategies for improving teaching, learning, and student well-being.

Topics of Research Covered:

- **Cognitive Development:** Investigating cognitive processes, memory, and problem-solving.
- **Social and Emotional Development:** Understanding social interactions, motivation, and emotional regulation.
- **Learning Theories:** Examining behaviorism, constructivism, and socio-cultural perspectives.
- **Assessment and Intervention:** Applying psychological assessments and designing effective interventions.

Assessment:

- **Research Proposal:** Students will submit a detailed research proposal for their thesis project.
- **Literature Review:** A comprehensive review of relevant literature in the chosen research area.
- **Oral Defense:** Presenting research findings and defending the proposal.
- **Thesis Manuscript:** Completion and submission of the final thesis.

Recommended Reading:

1. Woolfolk, A. E. (2019). *Educational Psychology.* Pearson.
2. Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes.* Harvard University Press.
3. Additional readings based on specific research interests and topics.

Course Title: Juris Doctor (JD)

Course Description:

The Juris Doctor (JD) program is a professional degree designed to prepare students for legal practice. It provides a comprehensive understanding of legal principles, analytical skills, and practical training. Students will engage in legal research, critical thinking, and ethical reasoning. The JD program emphasizes legal theory, practical application, and professional development.

Learning Objectives:

1. **Legal Foundations:** Develop a solid understanding of legal concepts, including constitutional law, torts, contracts, and criminal law.
2. **Legal Research and Writing:** Acquire skills in legal research, case analysis, and effective legal writing.

3. **Professional Ethics:** Understand ethical responsibilities, professional conduct, and legal advocacy.
4. **Practical Skills:** Gain experience in legal practice through clinics, moot court, and internships.

Topics Covered:

- **Civil Procedure:** Rules of civil litigation, jurisdiction, and legal procedures.
- **Legal Writing:** Drafting legal documents, memoranda, and briefs.
- **Constitutional Law:** Study of the US Constitution and its interpretation.
- **Legal Ethics:** Professional responsibilities, conflicts of interest, and client representation.

Assessment:

- **Coursework:** Regular assessments, quizzes, and assignments.
- **Legal Research Projects:** Conducting legal research and writing.
- **Moot Court and Mock Trials:** Practical advocacy exercises.
- **Bar Exam Preparation:** Preparing for the bar examination.

Recommended Reading:

1. Epstein, L., Walker, T., & Spitzer, H. (2019). *Cases and Materials on Torts.* Wolters Kluwer.
2. Chemerinsky, E. (2019). *Constitutional Law: Principles and Policies.* Wolters Kluwer.
3. Additional readings based on specific legal areas and interests.

Course Title: Judicial Science (Publications and Thesis)

Course Description:

The PhD program in Judicial Science (PhD by Published Work) offers an alternative pathway for scholars and legal professionals to contribute to legal scholarship through their published research. Candidates will compile a portfolio of previously published work, demonstrating their significant contribution to the field of judicial science. The course emphasizes critical analysis, originality, and coherence across the published papers.

Learning Objectives:

1. **Research Excellence in Judicial Science:** Develop expertise in a specialized area of legal research related to judicial processes, legal systems, and jurisprudence.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods relevant to judicial studies.
3. **Thesis Preparation:** Learn how to compile and critically analyze published papers within a coherent framework.
4. **Contributions to Legal Scholarship:** Explore evidence-based strategies for advancing knowledge in judicial science.

Topics of Research Covered:

- **Judicial Decision-Making:** Investigating factors influencing judges' rulings, legal reasoning, and case law development.
- **Comparative Judicial Systems:** Analyzing different legal traditions, court structures, and judicial independence.
- **Legal Ethics and Professional Conduct:** Examining ethical dilemmas faced by judges and legal practitioners.
- **Judicial Reform and Access to Justice:** Addressing challenges in court administration, procedural fairness, and legal remedies.

Assessment:

- **Published Works Portfolio:** Candidates will submit a collection of previously published papers (typically 3-10 papers) that demonstrate original research and scholarly contributions in judicial science.
- **Critical Review Statement:** A concise critical review contextualizing the works, demonstrating coherence, and identifying the candidate's contribution to legal scholarship.
- **Oral Defense:** Presenting and defending the portfolio before an examination panel.

Recommended Reading:

1. Epstein, L., Walker, T., & Spitzer, H. (2019). *Cases and Materials on Judicial Decision-Making.* Wolters Kluwer.
2. Posner, R. A. (2010). *How Judges Think.* Harvard University Press.
3. Additional readings based on specific research interests and topics.

Course Title: Doctor of Laws (PhD by Published Work)

Course Description:

The Doctor of Laws (PhD by Published Work) offers an alternative pathway for legal scholars and practitioners to contribute to legal scholarship through their previously published research. Candidates compile a portfolio of their scholarly work, demonstrating significant contributions to the field of law. The course emphasizes critical analysis, originality, and coherence across the published papers.

Learning Objectives:

1. **Research Excellence in Legal Scholarship:** Develop expertise in a specialized area of legal research related to jurisprudence, legal systems, and legal practice.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods relevant to legal studies.
3. **Thesis Preparation:** Learn how to compile and critically analyze published papers within a coherent framework.

4. **Contributions to Legal Knowledge:** Explore evidence-based strategies for advancing legal understanding.

Topics of Research Covered:

- **Legal Theory and Philosophy:** Investigating foundational legal concepts, ethics, and jurisprudential debates.
- **Comparative Legal Systems:** Analyzing different legal traditions, court structures, and judicial independence.
- **Legal Ethics and Professional Conduct:** Examining ethical dilemmas faced by legal professionals.
- **Legal Practice and Policy:** Addressing challenges in legal administration, procedural fairness, and legal remedies.

Assessment:

- **Published Works Portfolio:** Candidates submit a collection of previously published papers (typically 3-10 papers) demonstrating original research and scholarly contributions.
- **Critical Review Statement:** A concise summary contextualizing the works, demonstrating coherence, and identifying the contribution to legal scholarship.
- **Oral Defense:** Presenting and defending the portfolio before an examination panel.

Recommended Reading:

1. Epstein, L., Walker, T., & Spitzer, H. (2019). *Cases and Materials on Legal Decision-Making.* Wolters Kluwer.
2. Posner, R. A. (2010). *How Judges Think.* Harvard University Press.
3. Additional readings based on specific research interests and topics.

Course Title: PhD in Social Work (Publications and Thesis)

Course Description:

The PhD in Social Work (Publications and Thesis) offers an alternative pathway for scholars and practitioners to contribute to social work scholarship through their previously published research. Candidates compile a portfolio of their scholarly work, demonstrating significant contributions to the field of social work. The course emphasizes critical analysis, originality, and coherence across the published papers.

Learning Objectives:

1. **Research Excellence in Social Work:** Develop expertise in a specialized area of social work research related to practice, policy, or social justice.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods relevant to social work studies.
3. **Thesis Preparation:** Learn how to compile and critically analyze published papers within a coherent framework.

4. **Contributions to Social Work Knowledge:** Explore evidence-based strategies for advancing understanding and practice in social work.

Topics of Research Covered:

- **Social Work Practice and Interventions:** Investigating effective interventions, client outcomes, and evidence-based practices.
- **Social Policy and Advocacy:** Analyzing policies, legislation, and their impact on vulnerable populations.
- **Social Justice and Equity:** Examining systemic inequalities, human rights, and social change efforts.
- **Community-Based Research:** Addressing community needs, participatory research, and community development.

Assessment:

- **Published Works Portfolio:** Candidates submit a collection of previously published papers (typically 3-10 papers) demonstrating original research and scholarly contributions in social work.
- **Critical Review Statement:** A concise summary contextualizing the works, demonstrating coherence, and identifying the contribution to social work scholarship.
- **Oral Defense:** Presenting and defending the portfolio before an examination panel.

Recommended Reading:

1. Thyer, B. A. (Ed.). (2012). *The Handbook of Social Work Research Methods.* Sage Publications.
2. Payne, M. (2014). *Modern Social Work Theory.* Oxford University Press.
3. Additional readings based on specific research interests and topics.

Course Title: Alternative Dispute Resolution (Publications and Thesis)

Course Description:

The PhD program in Alternative Dispute Resolution (ADR) provides an opportunity for scholars and practitioners to contribute to ADR scholarship through their previously published research. Candidates compile a portfolio of their scholarly work, demonstrating significant contributions to the field of ADR. The course emphasizes critical analysis, originality, and coherence across the published papers.

Learning Objectives:

1. **Research Excellence in ADR:** Develop expertise in a specialized area of ADR research related to conflict resolution, negotiation, and dispute management.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods relevant to ADR studies.
3. **Thesis Preparation:** Learn how to compile and critically analyze published papers within a coherent framework.

4. **Contributions to ADR Knowledge:** Explore evidence-based strategies for advancing understanding and practice in ADR.

Topics of Research Covered:

- **ADR Processes and Techniques:** Investigating negotiation, mediation, arbitration, and hybrid approaches.
- **Legal and Ethical Considerations:** Analyzing legal frameworks, ethical dilemmas, and professional standards.
- **Cross-Cultural ADR:** Understanding cultural influences on conflict resolution practices.
- **ADR in Specific Contexts:** Addressing workplace disputes, family mediation, commercial conflicts, and international disputes.

Assessment:

- **Published Works Portfolio:** Candidates submit a collection of previously published papers (typically 3-10 papers) demonstrating original research and scholarly contributions in ADR.
- **Critical Review Statement:** A concise summary contextualizing the works, demonstrating coherence, and identifying the contribution to ADR scholarship.
- **Oral Defense:** Presenting and defending the portfolio before an examination panel.

Recommended Reading:

1. Menkel-Meadow, C., & Sternlight, J. R. (Eds.). (2019). *Dispute Resolution: Beyond the Adversarial Model.* Wolters Kluwer.
2. Riskin, L. L. (2005). *The Contemplative Lawyer: On the Potential Contributions of Mindfulness Meditation to Law Students, Lawyers, and Their Clients.* Harvard Negotiation Law Review.
3. Additional readings based on specific research interests and topics.

Course Title: PhD in Society and Culture (Publications and Thesis)

Course Description:

The PhD program in Society and Culture (Publications and Thesis) provides an alternative pathway for scholars and practitioners to contribute to interdisciplinary scholarship through their previously published research. Candidates compile a portfolio of their scholarly work, demonstrating significant contributions to the field of society and culture. The course emphasizes critical analysis, originality, and coherence across the published papers.

Learning Objectives:

1. **Research Excellence in Society and Culture:** Develop expertise in a specialized area of interdisciplinary research related to societal dynamics, cultural practices, and human behavior.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods relevant to social and cultural studies.

3. **Thesis Preparation:** Learn how to compile and critically analyze published papers within a coherent framework.
4. **Contributions to Interdisciplinary Knowledge:** Explore evidence-based strategies for advancing understanding and addressing societal challenges.

Topics of Research Covered:

- **Cultural Studies:** Investigating cultural identities, representations, and cultural production.
- **Social Change and Movements:** Analyzing social movements, activism, and societal transformations.
- **Globalization and Local Contexts:** Understanding the impact of globalization on local cultures and communities.
- **Gender, Race, and Intersectionality:** Addressing issues of power, inequality, and social justice.

Assessment:

- **Published Works Portfolio:** Candidates submit a collection of previously published papers (typically 3-10 papers) demonstrating original research and scholarly contributions in society and culture.
- **Critical Review Statement:** A concise summary contextualizing the works, demonstrating coherence, and identifying the contribution to interdisciplinary scholarship.
- **Oral Defense:** Presenting and defending the portfolio before an examination panel.

Recommended Reading:

1. Hall, S. (1997). *Representation: Cultural Representations and Signifying Practices.* Sage Publications.
2. Appadurai, A. (1996). *Modernity at Large: Cultural Dimensions of Globalization.* University of Minnesota Press.
3. Additional readings based on specific research interests and topics.

Course Title: PhD in Social Justice (Publications and Thesis)

Course Description:

The PhD program in Social Justice (Publications and Thesis) provides an alternative pathway for scholars and practitioners to contribute to interdisciplinary scholarship through their previously published research. Candidates compile a portfolio of their scholarly work, demonstrating significant contributions to the field of social justice. The course emphasizes critical analysis, originality, and coherence across the published papers.

Learning Objectives:

1. **Research Excellence in Social Justice:** Develop expertise in a specialized area of interdisciplinary research related to societal dynamics, equity, and human rights.

2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods relevant to social justice studies.
3. **Thesis Preparation:** Learn how to compile and critically analyze published papers within a coherent framework.
4. **Contributions to Social Justice Knowledge:** Explore evidence-based strategies for advancing understanding and addressing societal inequalities.

Topics of Research Covered:

- **Social Justice Theories:** Investigating foundational concepts, intersectionality, and structural oppression.
- **Human Rights Advocacy:** Analyzing legal frameworks, advocacy strategies, and global justice movements.
- **Equity and Inclusion:** Understanding marginalized communities, discrimination, and social change efforts.
- **Policy and Social Transformation:** Addressing policy analysis, community organizing, and transformative justice.

Assessment:

- **Published Works Portfolio:** Candidates submit a collection of previously published papers (typically 3-10 papers) demonstrating original research and scholarly contributions in social justice.
- **Critical Review Statement:** A concise summary contextualizing the works, demonstrating coherence, and identifying the contribution to interdisciplinary scholarship.
- **Oral Defense:** Presenting and defending the portfolio before an examination panel.

Recommended Reading:

1. Sen, A. (2009). *The Idea of Justice.* Harvard University Press.
2. Young, I. M. (1990). *Justice and the Politics of Difference.* Princeton University Press.
3. Additional readings based on specific research interests and topics.

Course Title: PhD in Clinical Psychology (Publications and Thesis)

Course Description:

The PhD program in Clinical Psychology (Publications and Thesis) provides an alternative pathway for scholars and practitioners to contribute to clinical psychology scholarship through their previously published research. Candidates compile a portfolio of their scholarly work, demonstrating significant contributions to the field of clinical psychology. The course emphasizes critical analysis, originality, and coherence across the published papers.

Learning Objectives:

1. **Research Excellence in Clinical Psychology:** Develop expertise in a specialized area of clinical psychology research related to assessment, intervention, and mental health.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods relevant to clinical studies.
3. **Thesis Preparation:** Learn how to compile and critically analyze published papers within a coherent framework.
4. **Contributions to Clinical Psychology Knowledge:** Explore evidence-based strategies for advancing understanding and improving psychological well-being.

Topics of Research Covered:

- **Psychological Assessment:** Investigating assessment tools, diagnostic criteria, and psychometric properties.
- **Evidence-Based Interventions:** Analyzing therapeutic approaches, treatment outcomes, and intervention effectiveness.
- **Mental Health Disorders:** Understanding specific disorders (e.g., anxiety, depression, schizophrenia) and their impact.
- **Ethical and Cultural Considerations:** Addressing ethical dilemmas, cultural competence, and diversity in clinical practice.

Assessment:

- **Published Works Portfolio:** Candidates submit a collection of previously published papers (typically 3-10 papers) demonstrating original research and scholarly contributions in clinical psychology.
- **Critical Review Statement:** A concise summary contextualizing the works, demonstrating coherence, and identifying the contribution to clinical psychology scholarship.
- **Oral Defense:** Presenting and defending the portfolio before an examination panel.

Recommended Reading:

1. Kazdin, A. E. (2017). *Single-Case Research Designs: Methods for Clinical and Applied Settings.* Oxford University Press.
2. Barlow, D. H., & Durand, V. M. (2015). *Abnormal Psychology: An Integrative Approach.* Cengage Learning.
3. Additional readings based on specific research interests and topics.

Course Title: PhD in Psychology (Publications and Thesis)

Course Description:

The PhD program in Psychology (Publications and Thesis) provides an alternative pathway for scholars and practitioners to contribute to psychological scholarship through their previously published research. Candidates compile a portfolio of their scholarly work,

demonstrating significant contributions to the field of psychology. The course emphasizes critical analysis, originality, and coherence across the published papers.

Learning Objectives:

1. **Research Excellence in Psychology:** Develop expertise in a specialized area of psychological research related to cognition, behavior, and mental health.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods relevant to psychological studies.
3. **Thesis Preparation:** Learn how to compile and critically analyze published papers within a coherent framework.
4. **Contributions to Psychological Knowledge:** Explore evidence-based strategies for advancing understanding and improving psychological well-being.

Topics of Research Covered:

- **Cognitive Psychology:** Investigating memory, perception, attention, and decision-making.
- **Clinical and Counseling Psychology:** Analyzing mental health disorders, therapeutic interventions, and assessment tools.
- **Social Psychology:** Understanding social behavior, attitudes, and group dynamics.
- **Neuropsychology and Brain Function:** Addressing brain-behavior relationships and neurological disorders.

Assessment:

- **Published Works Portfolio:** Candidates submit a collection of previously published papers (typically 3-10 papers) demonstrating original research and scholarly contributions in psychology.
- **Critical Review Statement:** A concise summary contextualizing the works, demonstrating coherence, and identifying the contribution to psychological scholarship.
- **Oral Defense:** Presenting and defending the portfolio before an examination panel.

Recommended Reading:

1. Sternberg, R. J., & Sternberg, K. (2018). *Cognitive Psychology.* Cengage Learning.
2. Barlow, D. H., & Durand, V. M. (2015). *Abnormal Psychology: An Integrative Approach.* Cengage Learning.
3. Additional readings based on specific research interests and topics.

Course Title: PhD in Psychology (Publications and Thesis)

Course Description:

The PhD program in Psychology (Publications and Thesis) provides an alternative pathway for scholars and practitioners to contribute to psychological scholarship through their previously published research. Candidates compile a portfolio of their scholarly work,

demonstrating significant contributions to the field of psychology. The course emphasizes critical analysis, originality, and coherence across the published papers.

Learning Objectives:

1. **Research Excellence in Psychology:** Develop expertise in a specialized area of psychological research related to cognition, behavior, and mental health.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods relevant to psychological studies.
3. **Thesis Preparation:** Learn how to compile and critically analyze published papers within a coherent framework.
4. **Contributions to Psychological Knowledge:** Explore evidence-based strategies for advancing understanding and improving psychological well-being.

Topics of Research Covered:

- **Cognitive Psychology:** Investigating memory, perception, attention, and decision-making.
- **Clinical and Counseling Psychology:** Analyzing mental health disorders, therapeutic interventions, and assessment tools.
- **Social Psychology:** Understanding social behavior, attitudes, and group dynamics.
- **Neuropsychology and Brain Function:** Addressing brain-behavior relationships and neurological disorders.

Assessment:

- **Published Works Portfolio:** Candidates submit a collection of previously published papers (typically 3-10 papers) demonstrating original research and scholarly contributions in psychology.
- **Critical Review Statement:** A concise summary contextualizing the works, demonstrating coherence, and identifying the contribution to psychological scholarship.
- **Oral Defense:** Presenting and defending the portfolio before an examination panel.

Recommended Reading:

1. Sternberg, R. J., & Sternberg, K. (2018). *Cognitive Psychology.* Cengage Learning.
2. Barlow, D. H., & Durand, V. M. (2015). *Abnormal Psychology: An Integrative Approach.* Cengage Learning.
3. Additional readings based on specific research interests and topics.

Course Title: PhD in Homeland Security (Publications and Thesis)

Course Description:

The PhD program in Homeland Security (Publications and Thesis) provides an alternative pathway for scholars and practitioners to contribute to interdisciplinary scholarship through their previously published research. Candidates compile a portfolio of their scholarly work, demonstrating significant contributions to the field of homeland security. The course emphasizes critical analysis, originality, and coherence across the published papers.

Learning Objectives:

1. **Research Excellence in Homeland Security:** Develop expertise in a specialized area of homeland security research related to threat assessment, emergency management, and national security.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods relevant to security studies.
3. **Thesis Preparation:** Learn how to compile and critically analyze published papers within a coherent framework.
4. **Contributions to Homeland Security Knowledge:** Explore evidence-based strategies for advancing understanding and enhancing security practices.

Topics of Research Covered:

- **Threat Analysis and Risk Assessment:** Investigating threats posed by terrorism, cyberattacks, natural disasters, and pandemics.
- **Emergency Preparedness and Response:** Analyzing strategies for disaster management, crisis communication, and resilience.
- **Security Policy and Intelligence:** Understanding policy formulation, intelligence gathering, and national security frameworks.
- **Critical Infrastructure Protection:** Addressing vulnerabilities in transportation, energy, and communication systems.

Assessment:

- **Published Works Portfolio:** Candidates submit a collection of previously published papers (typically 3-10 papers) demonstrating original research and scholarly contributions in homeland security.
- **Critical Review Statement:** A concise summary contextualizing the works, demonstrating coherence, and identifying the contribution to interdisciplinary scholarship.
- **Oral Defense:** Presenting and defending the portfolio before an examination panel.

Recommended Reading:

1. Buzan, B., & Wæver, O. (2003). *Regions and Powers: The Structure of International Security.* Cambridge University Press.
2. Clarke, R., & Newman, G. (2006). *Outsmarting the Terrorists.* Praeger.
3. Additional readings based on specific research interests and topics.

Course Title: PhD in Cybersecurity Law (Publications and Thesis)

Course Description:

The PhD program in Cybersecurity Law (Publications and Thesis) provides an alternative pathway for scholars and practitioners to contribute to interdisciplinary scholarship through their previously published research. Candidates compile a portfolio of their scholarly work, demonstrating significant contributions to the field of cybersecurity law. The course emphasizes critical analysis, originality, and coherence across the published papers.

Learning Objectives:

1. **Research Excellence in Cybersecurity Law:** Develop expertise in a specialized area of legal research related to cybersecurity, privacy, and digital rights.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods relevant to legal studies.
3. **Thesis Preparation:** Learn how to compile and critically analyze published papers within a coherent framework.
4. **Contributions to Legal Knowledge:** Explore evidence-based strategies for advancing understanding and addressing legal challenges in the digital age.

Topics of Research Covered:

- **Cybersecurity Regulations and Compliance:** Investigating legal frameworks, data protection laws, and international agreements.
- **Privacy Rights and Surveillance:** Analyzing privacy laws, surveillance practices, and individual rights in cyberspace.
- **Digital Crime and Cybersecurity Enforcement:** Understanding legal responses to cybercrime, jurisdictional issues, and law enforcement cooperation.
- **Ethical and Policy Considerations:** Addressing ethical dilemmas, policy implications, and the balance between security and civil liberties.

Assessment:

- **Published Works Portfolio:** Candidates submit a collection of previously published papers (typically 3-10 papers) demonstrating original research and scholarly contributions in cybersecurity law.
- **Critical Review Statement:** A concise summary contextualizing the works, demonstrating coherence, and identifying the contribution to interdisciplinary scholarship.
- **Oral Defense:** Presenting and defending the portfolio before an examination panel.

Recommended Reading:

1. Clarke, R., & Newman, G. (2006). *Outsmarting the Terrorists.* Praeger.
2. Greenwald, G. (2014). *No Place to Hide: Edward Snowden, the NSA, and the U.S. Surveillance State.* Metropolitan Books.
3. Additional readings based on specific research interests and topics.

Course Title: PhD in International Relations and Diplomacy (Publications and Thesis)

Course Description:

The PhD program in International Relations and Diplomacy (Publications and Thesis) provides an alternative pathway for scholars and practitioners to contribute to interdisciplinary scholarship through their previously published research. Candidates compile a portfolio of their scholarly work, demonstrating significant contributions to the field of international relations and diplomacy. The course emphasizes critical analysis, originality, and coherence across the published papers.

Learning Objectives:

1. **Research Excellence in International Relations:** Develop expertise in a specialized area of international relations research related to global politics, diplomacy, and international cooperation.
2. **Methodology Mastery:** Acquire advanced research skills, including qualitative and quantitative methods relevant to diplomatic studies.
3. **Thesis Preparation:** Learn how to compile and critically analyze published papers within a coherent framework.
4. **Contributions to Diplomatic Knowledge:** Explore evidence-based strategies for advancing understanding and addressing global challenges.

Topics of Research Covered:

- **International Security and Conflict Resolution:** Investigating security studies, conflict management, and peacebuilding.
- **Diplomatic Practices and Negotiation:** Analyzing diplomatic protocols, negotiation techniques, and multilateral diplomacy.
- **Global Governance and International Organizations:** Understanding the role of international institutions, treaties, and norms.
- **Cultural Diplomacy and Soft Power:** Addressing cultural exchange, public diplomacy, and national branding.

Assessment:

- **Published Works Portfolio:** Candidates submit a collection of previously published papers (typically 3-10 papers) demonstrating original research and scholarly contributions in international relations and diplomacy.
- **Critical Review Statement:** A concise summary contextualizing the works, demonstrating coherence, and identifying the contribution to interdisciplinary scholarship.
- **Oral Defense:** Presenting and defending the portfolio before an examination panel.

Recommended Reading:

1. Keohane, R. O., & Nye, J. S. (2001). *Power and Interdependence: World Politics in Transition.* Pearson.

2. Kissinger, H. (1994). *Diplomacy.* Simon & Schuster.
3. Additional readings based on specific research interests and topics.

Course Title: Governance, Peace Building, and Leadership (Publications and Thesis)

Course Description:

This course explores the intersection of governance, peace building, and leadership within the context of contemporary global challenges. Students will critically analyze theories, policies, and practices related to peace and development, emphasizing Africa's unique context. The course delves into issues such as political instability, food security, poverty, and the role of governance in fostering peace. It also examines leadership models that promote sustainable development.

Learning Objectives:

By the end of this course, students will be able to:

1. **Analyze** the relationship between governance, peace, and development.
2. **Evaluate** the impact of leadership on peace-building efforts.
3. **Critically assess** theories and frameworks related to peace and governance.
4. **Apply** research methodologies to address real-world challenges.
5. **Synthesize** findings into scholarly publications and a thesis.

Topics of Research Covered:

1. **Post-Cold War Dynamics:** Understanding the link between peace and development in the post-Cold War era.
2. **Governance Challenges:** Examining issues of bad governance, fragile leadership, and state responsiveness.
3. **Conflict Resolution Models:** Analyzing various approaches to conflict resolution and peace building.
4. **Leadership Theories:** Exploring leadership theories and their implications for sustainable development.
5. **Case Studies:** Investigating specific African contexts and successful peace-building initiatives.

Assessment:

- **Research Papers:** Students will submit research papers on relevant topics, integrating theoretical frameworks and empirical evidence.
- **Thesis Proposal:** Each student will develop a thesis proposal related to governance, peace, and leadership.
- **Oral Presentations:** Students will present their research findings to peers and faculty.
- **Class Participation:** Active engagement in discussions, seminars, and workshops.

Recommended Reading:

1. Lederach, J. P. (2005). *The Moral Imagination: The Art and Soul of Building Peace*. Oxford University Press.
2. Sen, A. (1999). *Development as Freedom*. Anchor Books.
3. Fukuyama, F. (2014). *Political Order and Political Decay: From the Industrial Revolution to the Globalization of Democracy*. Farrar, Straus and Giroux.

Course Title: Banking and Finance Law (Publications and Thesis)

Course Description:

This course delves into the intricate legal landscape of banking and finance. It explores the regulatory frameworks, contractual relationships, and emerging issues within the financial sector. Students will engage with cutting-edge research and contribute to the field through their own thesis work.

Learning Objectives:

By the end of this course, students will be able to:

1. **Analyze** the legal implications of financial transactions.
2. **Evaluate** the impact of regulatory changes on banking practices.
3. **Critically assess** case law related to banking and finance.
4. **Conduct original research** for their thesis.

Topics of Research Covered:

1. **Banking Regulations:** Study of central banking laws, Basel Accords, and anti-money laundering regulations.
2. **Financial Contracts:** Exploration of loan agreements, derivatives, and securitization.
3. **Consumer Protection:** Examination of consumer rights in financial services.
4. **Fintech and Blockchain:** Legal challenges posed by technological innovations.
5. **Thesis Research Areas:** Students will choose specific topics for their thesis, such as bank insolvency, financial market misconduct, or digital currencies.

Assessment:

- **Thesis Proposal:** Each student will develop a thesis proposal related to banking and finance law.
- **Oral Defense:** Students will defend their thesis proposals before a panel.
- **Research Papers:** Students will submit research papers on relevant legal issues.
- **Class Participation:** Active engagement in discussions and seminars.

Recommended Reading:

1. Clarke, M., & O'Brien, J. (Eds.). (2019). *The Oxford Handbook of Banking and Financial History*. Oxford University Press.

2. Avgouleas, E. (2019). *The Mechanics and Regulation of Market Abuse: A Legal and Economic Analysis*. Cambridge University Press.
3. Ferrarini, G., & Wymeersch, E. (Eds.). (2019). *Financial Regulation at the Crossroads: Implications for Supervision, Institutional Design, and Trade*. Oxford University Press.

Course Title: Construction Law (Publications and Thesis)

Course Description:

This course delves into the intricate legal aspects of construction and infrastructure projects. It examines the legal frameworks, contractual relationships, and dispute resolution mechanisms within the construction industry. Students will engage in advanced research and contribute to the field through their own thesis work.

Learning Objectives:

By the end of this course, students will be able to:

1. **Analyze** complex legal issues related to construction projects.
2. **Evaluate** the impact of regulations and case law on construction practices.
3. **Conduct original research** for their thesis in construction law.

Topics of Research Covered:

1. **Construction Contracts:** Study of standard forms, variations, and claims.
2. **Risk Allocation:** Legal aspects of risk management in construction.
3. **Dispute Resolution:** Arbitration, mediation, and litigation in construction disputes.
4. **Environmental Law:** Addressing environmental impact assessments and sustainability.
5. **Thesis Research Areas:** Students will choose specific topics for their thesis, such as construction contract interpretation, professional negligence, or construction insurance law.

Assessment:

- **Thesis Proposal:** Each student will develop a thesis proposal related to construction law.
- **Oral Defense:** Students will defend their thesis proposals before a panel.
- **Research Papers:** Students will submit research papers on relevant legal issues.
- **Class Participation:** Active engagement in discussions and seminars.

Recommended Reading:

1. Smith, N. J., & Hughes, W. P. (2018). *Construction Law: From Beginner to Practitioner*. Routledge.
2. Davies, A., & Davenport, J. (2019). *Construction Law Handbook*. Wiley.

3. Keane, A., & Caletka, A. F. (2016). *Construction Law: An Introduction for Engineers, Architects, and Contractors*. CRC Press.

Course Title: Energy and Climate Change Law (Publications and Thesis)

Course Description:

This course delves into the intricate legal aspects of energy and climate change. It examines the evolving legal frameworks, international agreements, and regulatory challenges within the energy sector. Students will engage in advanced research and contribute to the field through their own thesis work.

Learning Objectives:

By the end of this course, students will be able to:

1. **Analyze** the legal implications of energy policies and climate agreements.
2. **Evaluate** the impact of renewable energy transition on legal frameworks.
3. **Conduct original research** for their thesis in energy and climate law.

Topics of Research Covered:

1. **International Climate Agreements:** Study of the Paris Agreement, Kyoto Protocol, and other global accords.
2. **Energy Transition:** Legal aspects of transitioning to renewable energy sources.
3. **Carbon Markets and Emissions Trading:** Understanding legal mechanisms for emissions reduction.
4. **Climate Litigation:** Examining legal cases related to climate change and environmental justice.
5. **Thesis Research Areas:** Students will choose specific topics for their thesis, such as energy justice, carbon pricing, or climate finance law.

Assessment:

- **Thesis Proposal:** Each student will develop a thesis proposal related to energy and climate change law.
- **Oral Defense:** Students will defend their thesis proposals before a panel.
- **Research Papers:** Students will submit research papers on relevant legal issues.
- **Class Participation:** Active engagement in discussions and seminars.

Recommended Reading:

1. Dahlan, M. R., Lastra, R. M., & Rochette, G. (Eds.). (2021). *Research Handbook of Energy Law and Ethics*. Edward Elgar Publishing.
2. Energy and Climate Change Law Review (Published by Queen Mary University of London).

Course Title: Animal Law (Publications and Thesis)

Course Description:

This course explores the legal dimensions of animal welfare, rights, and protection. It critically examines the intersection of law, ethics, and the treatment of animals in various contexts. Students will engage in advanced research and contribute to the field through their own thesis work.

Learning Objectives:

By the end of this course, students will be able to:

1. **Analyze** legal frameworks related to animal rights and welfare.
2. **Evaluate** the impact of legislation on animal protection.
3. **Conduct original research** for their thesis in animal law.

Topics of Research Covered:

1. **Animal Rights vs. Welfare:** Debates surrounding the legal status of animals.
2. **Wildlife Law:** Legal aspects of wildlife conservation and habitat protection.
3. **Companion Animals:** Legal issues related to pet ownership, cruelty prevention, and adoption.
4. **Farm Animal Law:** Regulations governing factory farming, slaughterhouses, and animal agriculture.
5. **Thesis Research Areas:** Students will choose specific topics for their thesis, such as animal testing ethics, endangered species protection, or legal challenges in animal rights litigation.

Assessment:

- **Thesis Proposal:** Each student will develop a thesis proposal related to animal law.
- **Oral Defense:** Students will defend their thesis proposals before a panel.
- **Research Papers:** Students will submit research papers on relevant legal issues.
- **Class Participation:** Active engagement in discussions and seminars.

Recommended Reading:

1. Favre, D. (Ed.). (2019). *International Animal Law: Understanding Animal Welfare, Biodiversity, and Conservation*. Brill.
2. Sankoff, P., White, A., & Willock, K. (Eds.). (2015). *Animal Law in Australasia: Continuing the Dialogue*. Federation Press.

Course Title: Intellectual Property Law (Publications and Thesis)

Course Description:

This interdisciplinary program focuses on the legal aspects of intellectual property (IP) rights, including patents, trade secrets, copyrights, and trademarks. It critically examines the evolving

legal frameworks and their impact on innovation, creativity, and economic development. Students will engage in advanced research and contribute to the field through their own thesis work.

Learning Objectives:

By the end of this course, students will be able to:

1. **Analyze** complex legal issues related to IP protection and enforcement.
2. **Evaluate** the role of IP in fostering technological advancements and business growth.
3. **Conduct original research** for their thesis in intellectual property law.

Topics of Research Covered:

1. **Patent Law:** Study of patentability criteria, infringement, and licensing.
2. **Copyright Law:** Exploration of copyright protection, fair use, and digital rights.
3. **Trademark Law:** Legal aspects of brand protection, trademark registration, and enforcement.
4. **Trade Secrets:** Understanding the legal framework for safeguarding confidential information.
5. **Thesis Research Areas:** Students will choose specific topics for their thesis, such as IP in emerging technologies, international IP harmonization, or IP litigation strategies.

Assessment:

- **Thesis Proposal:** Each student will develop a thesis proposal related to intellectual property law.
- **Oral Defense:** Students will defend their thesis proposals before a panel.
- **Research Papers:** Students will submit research papers on relevant legal issues.
- **Class Participation:** Active engagement in discussions and seminars.

Recommended Reading:

1. Goldstein, P. (2020). *International Copyright: Principles, Law, and Practice*. Oxford University Press.
2. Dinwoodie, G. B., & Janis, M. D. (2018). *Trademark and Unfair Competition Law: Cases and Materials*. Wolters Kluwer.
3. Rai, A. K., & Reichman, J. H. (Eds.). (2015). *Intellectual Property Rights: Legal and Economic Challenges for Development*. Oxford University Press.

Course Title: Mining Law and Policy (Publications and Thesis)

Course Description:

This interdisciplinary program focuses on the legal aspects of mining, mineral resources, and policy frameworks. It critically examines the evolving legal landscape related to mining operations, environmental impact, and community rights. Students will engage in advanced research and contribute to the field through their own thesis work.

Learning Objectives:

By the end of this course, students will be able to:

1. **Analyze** complex legal issues in mining law and policy.
2. **Evaluate** the impact of mining regulations on environmental sustainability and social justice.
3. **Conduct original research** for their thesis in mining law.

Topics of Research Covered:

1. **Mining Regulations:** Study of national and international mining laws, licensing, and permitting.
2. **Environmental Compliance:** Legal aspects of environmental impact assessments, reclamation, and rehabilitation.
3. **Community Engagement:** Examining legal frameworks for community consultation, indigenous rights, and benefit-sharing.
4. **Resource Governance:** Understanding legal mechanisms for sustainable resource management.
5. **Thesis Research Areas:** Students will choose specific topics for their thesis, such as mining rights disputes, corporate social responsibility, or legal challenges in resource extraction.

Assessment:

- **Thesis Proposal:** Each student will develop a thesis proposal related to mining law and policy.
- **Oral Defense:** Students will defend their thesis proposals before a panel.
- **Research Papers:** Students will submit research papers on relevant legal issues.
- **Class Participation:** Active engagement in discussions and seminars.

Recommended Reading:

1. Scholtz, H., & Strydom, J. (Eds.). (2019). *Mining Law and Policy: International Perspectives*. Juta and Company Ltd.
2. Burns, K. (2018). *Mining Law and Policy: International Perspectives*. Oxford University Press.

CAPITAL OPERATIONAL BUDGET FOR MASTER OF RESEARCH (MRES)

The programme budget is shown in the table below:

Capital Operational Budget for the Master of Research (MRes) **This budget projection calculation is based on thirty students per year, covering two semesters, at a cost of R70,000 per student.**					
Description	**2023**	**2024**	**2025**	**2026**	**TOTAL**
Equity Financing	7554354	-	-	-	7554354
Master of Research (MRes)	2008890	12953250	14407650	19861650	49231440
Other	152712	192708	254520	363600	963 540
TOTAL	**9715956**	**13145958**	**14662170**	**20225250**	**57749334**
Expenditure					
Administrative Costs	690190	1090800	1090800	1090800	3962589
Salaries and Wages	767876	236340	236340	236340	1476896
Equipment Costs	1524073	363600	363600	363600	2614873
Operating Costs	1088626	501768	501768	501768	2593930
Research, Training & Workshops	435451	73811	73811	73811	656883
Construction and Infrastructure	2177248	545400	545400	545400	3813448
Marketing and Studio Recording	217728	36724	-	36724	291175
Travelling and Accommodation	653175	491587	491587	491587	2127936
Vehicles	-	653171	-	363600	1016771
Other Expenses	653175	93700	93700	93700	934 274
TOTAL	**8207539**	**4086900**	**3397006**	**3797329**	**19488775**
Repayment					
Equity and Dividend Payments	1888590	1888590	1888590	1888590	7554358
Interest - 18%	339948	339948	339948	339948	1359792
Charges and Accounting	66859	66859	66859	66859	267435
TOTAL	**2295396**	**2295396**	**2295396**	**2295396**	**9181584**
Total Income	9715956	13145958	14662170	20225250	57749334
Total Expenditure	10502935	6382296	5692402	6092725	28670358
B/Forward	-786979	6763662	8969768	14132525	29078976
B/ Down	**-786979**	**6763662**	**8969768**	**14132525**	**29078976**

Join Our Celestial Journey
Illuminating Minds, Igniting Innovation. Be Part of the Spark as we Unlock the Universe's Secrets, One Equation at a Time

Office of Institutional Planning and Effectiveness
The Knowledge Park I, Examination Council of Eswatini
P.O. Box D61, Ezulwini
Eswatini

www.springfieldresearch.university
frontdesk@springfieldresearch.university

+268 7619-2898
+268 2417-1634

Research Beyond Boundaries

SPRINGFIELD RESEARCH UNIVERSITY