University of Idaho
Department of Nuclear Engineering
and Industrial Management

NUCLEAR ENGINEERING
GRADUATE STUDENT HANDBOOK

10th Edition
OCTOBER 2020

University of Idaho
College of Engineering

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PREFACE

This handbook describes the policies and procedures of the Nuclear Engineering Program at The University of Idaho and supplements the information in the current University of Idaho General Catalog. It includes discussions of academic and examination requirements for both Masters and Doctoral programs. An undergraduate nuclear engineering program is not offered at this time. The Masters and Doctoral program requirements are, at a minimum, consistent with those of the College of Graduate Studies. A summary of the University requirements for graduate degrees can be found at the Registrar's Office under the catalog link. Competitive research and teaching assistantships may be available. Early application to the degree program is encouraged. A listing of Nuclear Engineering Faculty with their current areas of interest can be found in Appendix A. Information in this handbook is offered as a guide for advising and is subject to change without notice. The General Catalog and university policies and regulations supersede materials in this handbook. This handbook supersedes any previous versions of the handbook.

August 2020

1.0 Introduction

1.1 Purpose of Handbook

This handbook describes the policies, rules, and procedures of the Nuclear Engineering (NE) Program of University of Idaho. The College of Graduate Studies website and the general university catalog provide the rules and policies governing graduate programs and offers a multitude of resources designed to support a successful graduate experience.

Any waivers or revisions concerning the policies and requirements set forth in this handbook must be approved by the NE Program Director and in some cases the College of Graduate Studies (CoGS). However, it should be stressed that the NE graduate program is flexible and can be adapted to the student's needs when appropriate.

If you have questions concerning the policies and procedures outlined in this handbook, please contact the Nuclear Engineering Program Director or the Recruitment & Student Engagement Director.

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College of Graduate Studies:
www.uidaho.edu/cogs

1.2 Educational Philosophy of the Nuclear Engineering Faculty

The Nuclear Engineering Faculty believe that a graduate degree is more than additional course work. Adjusting from undergraduate to graduate work involves a transition in the way the student approaches studies. Graduate education is a transition period from being a student to that of a professional engineer and researcher and to advance one's career. It is a time for the graduate student to grow intellectually and personally, create new knowledge, learn to work independently, and gain experience in performing research and development. Graduate studies provide the opportunity to broaden the individual's knowledge base, to obtain a depth of understanding in a chosen field and to prepare oneself for an increasingly competitive job market. The faculty value student success and are available to assist in students' growth and development as engineers and as professionals.

The Nuclear Engineering faculty at the University of Idaho believe that it is a privilege to work and study in collaboration with leaders in the field of nuclear engineering and recruit only the most capable students. Both full-time and part-time students are encouraged to apply. The UI Nuclear Engineering program's ideal location to, and partnership with, the Idaho National Laboratory (INL) creates opportunities for students to interact with the researchers at the lead nuclear research facility in the U.S. Students can work and study at the Center for Advanced Energy Studies (CAES), a research facility that is operated collaboratively with the INL as well as at the other facilities at the Idaho Falls campus. We believe that students are an important part of collaboration and in support of that, every effort is made to foster a world-class research and education environment.

1.3 Graduate Student Code of Research and Scholarly Conduct

The University of Idaho expects that students will engage in academic activity with high standards of honesty and integrity. The academic enterprise is dependent upon such behavior. These values are central to the educational process and are also cornerstone values for citizenship and professional conduct after students leave the University. Graduate students are responsible for learning about appropriate standards for ethical research and scholarly conduct and for following all university policies related to ethical research and scholarly conduct.

The University of Idaho has specific academic honesty expectations described in the Student Code of Conduct. These are minimum standards that are generally applied across the University. However, professors may more specifically define standards for their courses through information described in the course syllabus or other documents. Students must learn the expectations of each instructor since learning environments do vary both in content and teaching style. Sometimes the issues of academic integrity are obvious but other times a student may struggle with issues that appear to be less clear**. Talk with your instructor if you have a concern about what is expected of you.** Student Code of Conduct can be found at www.uidaho.edu/student-affairs/dean-of-students/student-conduct/student-code-of-conduct

1.4 Nuclear Engineering Program Learning Outcomes

In alignment with the University of Idaho Learning Outcomes, the faculty of the Nuclear Engineering Program have developed outcomes for the masters and doctoral students. Learning outcomes both direct and assess programs and allow for continuous improvement. As such, the outcomes and assessments at each level can change from year to year in order to maintain a high standard of teaching and learning.

The outcomes for the masters and doctoral students are listed in Appendix C.

1.5 Other Expectations

Students are expected to know and comply with UI rules and regulations including College of Graduate Studies (CoGS), University Research Office, and College of Engineering NE Program. In addition, students are expected to make academic progress each semester. **An annual Graduate Progress Report is required for all graduate students**.

1.6 Communication

Communication is key to success as a graduate student. Communication includes Vandal Mail, BBLearn, meeting with Major Professor, knowing deadlines, etc.

2.0 GRADUATE STUDIES ADMISSION POLICY

Admission to the College of Graduate Studies (CoGS) is open to any student who holds a baccalaureate degree and who presents a scholastic record indicating probable success in graduate work. The General Catalog and Graduate Admission website list the University's GPA and other admission requirements.

3.0 ADMISSION TO THE NUCLEAR ENGINEERING GRADUATE PROGRAM

3.1 Admission with Nuclear or Mechanical Engineering Undergraduate Degree

Admission to the Nuclear Engineering Graduate Program is open to any student who is admissible to CoGS if the baccalaureate degree is in mechanical or nuclear engineering from an ABET accredited U.S. program. Admission is subject to enrollment limits.

3.2 Admission with Undergraduate Degree in Non-Nuclear/Mechanical Engineering Field

Students with a baccalaureate degree from an accredited U.S. engineering program with a major other than nuclear or mechanical engineering may also be admitted to the Nuclear Engineering Graduate Program, subject to enrollment limits. However, such students must demonstrate a basic proficiency in the areas of chemistry, mathematics, physics and energy. This may require the student to include courses, in addition to the 30 credits of graduate courses required for the Master's degree. These may be assigned as a part of the student's study plan as undergraduate deficiencies. The subjects included in the following list define the areas for which proficiency is expected as an **entrance** requirement.

Energy:

Thermodynamics (Engr 320)
Fluid Dynamics (Engr 335)
Heat Transfer (ME 345)

Chemistry and Physics:

Principles of Chemistry II (Chem 112)
Modern Physics (PHYS 305)

Mathematics:

Numerical Methods
Computer Programming Language(s)

Each applicant to the program is evaluated individually. Exceptions and/or substitutions may be made to the above requirements.

3.3 Admission with a Non-Engineering Undergraduate Degree

Students who do not have a U.S. engineering baccalaureate degree but are admissible to CoGS may also be admitted to the Nuclear Engineering Graduate Program. Admission is subject to enrollment limits. However, such students must demonstrate a proficiency in the basic subjects included in an undergraduate engineering program. This may require the student to include courses, in addition to the 30 credits of graduate courses required for the Master's degree. These are assigned as a part of the student's study plan as undergraduate deficiencies. The subjects included in the following list define the areas for which proficiency is expected as an **entrance** requirement. An appropriate combination of mathematics and basic science including:

Multivariable Calculus (Math 275)
Ordinary Differential Equations (Math 310)
Probability and Statistics (Stat 301)
Chemistry (Chem 111 & 112)
Calculus based physics (Phys 211, 212, 213)

1. Sixteen credits of humanities and social sciences including both breadth and depth.

2. Forty-eight credits of engineering topics which include engineering science and engineering design.

   Engineering science will include:

   Mechanics (Engr 210, Engr 220, Engr 350)
   Thermodynamics (Engr 320)
   Electrical Circuits (Engr 240)
   Materials Science (MSE 201)
   Transport Phenomena (Engr 335, ME 345)

   Engineering design must include:

   - ✓ A meaningful, major engineering design experience that was built upon the fundamental concepts of mathematics
   - ✓ Basic science, humanities and social science, engineering topics and communication skills
   - ✓ A capstone design experience such as ME 424/426 is required

3. Appropriate laboratory experience such that the student is competent to conduct experimental work (laboratory courses are required which include an instrumentation class such as ME 330).

4. Appropriate computer-based experience including the computational techniques needed to solve specific engineering problems (classes such as ME 123/223 are required along with other courses where computers were used to solve specific engineering problems).

5. Competence in written and oral English communication, including both English composition (e.g. - Eng 102) and English technical writing (e.g. - Eng 317).

6. An understanding of the ethical, social, economic, and safety considerations in engineering practice (see engineering design under item 3 above).

The evaluation of equivalent courses will be done on an individual basis. If a student does not have the equivalent of one of the above courses (except capstone design), the student may enroll in the course.

3.4 International Student Admissions

International students without a U.S. baccalaureate degree must meet university and CoGS requirements for admission, as well as program requirements listed above. Admission is subject to enrollment limits.

3.5 Graduate Record Examination and GPA

Graduate Record Examination (GRE) test results are recommended but not required for applicants with an engineering baccalaureate degree from a U.S. ABET accredited program. For all other applicants, GRE general test results are required. These GRE scores and the applicant's grade point average (GPA) aid the faculty in estimating the applicant's scholastic abilities, which are suggestive of probable success in graduate work and are helpful in counseling students in their courses of graduate study.

For more details on the exam please visit www.gre.org.

3.6 Proof of English Competency (TOEFL)

For Graduate Admission purposes, all students must meet Academic and Language Requirements. If a test score is needed, the most common and widely accepted test is the TOEFL (Test of English as a Foreign Language).

The institution code for the TOEFL is 4843.

For more information on this requirement got to www.uidaho.edu/admissions/graduate

*All tests must have been taken within two years of the semester in which the student wishes to begin the program.

4.0 M.ENGR. DEGREE REQUIREMENTS & PROCEDURES (NON-THESIS OPTION)

A minimum of 30 credits are required for the M.Engr. (non-thesis) degree in Nuclear Engineering. See Curriculum Guide in Appendix E.

- At least 18 credits must be at the 500 level.
- Up to 12 credits may be at 400 level.
- No classes required for the undergraduate degree can be used as part of the graduate program.
- An overall GPA of 3.0 is required for graduation. Each semester, students must earn at least a 3.0 GPA to remain in good standing. In addition, grades for each course on the study plan must be at or above a 3.0 GPA. For further details, review College of Graduate Studies requirements.

The University of Idaho - Idaho Falls maintains a Three Year Plan for the rotation of courses. University of Idaho reserves the right to change the Three Year Plan at any time due to enrollment requirements or other course scheduling issues.

The combined total of transfer credits, non-degree seeking credits, and approved credits more than eight years old at the time the degree is awarded shall not exceed 12 credits for master's programs. It is advisable for students to apply for admission prior to, or early in, their coursework.

Credits earned at an institution that does not grant graduate degrees cannot be transferred to University of Idaho for graduate credit. For questions about the transferability of a course, contact the NE Director or College of Graduate Studies.

Details on the masters study plan including age of credits can be found on the College of Graduate Studies website under the Steps to Degree, Masters Study Plan and Degree Audit at www.uidaho.edu/cogs and in the catalog.

4.1 Program

Students interested in the program should contact the Program Director well in advance of the first registration for a tentative evaluation of educational preparation. Deficiencies in undergraduate course preparation for the graduate program will be identified.

4.2 Nomination of Major Professor

The student, Program Director, and potential Major Professor should discuss and formalize the nomination of the Major Professor **by the end of the first semester of enrollment**. The nominated Major Professor, in conjunction with the student must submit the Appointment of Major Professor and/or Committee Form to the College of Graduate Studies.

4.3 Study Plan

The Study Plan should be prepared **by the end of the second semester of enrollment**. The Major Professor, department and College of graduate Studies approve the study plan submitted by the student through the university's VandalWeb. The Major Professor must be listed on VandalWeb, before the plan can be approved. Students are encouraged to create a draft prior to this. See Curriculum guide in Appendix D for core courses.

4.4 Committee

A supervisory committee is not required for the M.Engr. non-thesis degree.

4.5 Capstone Requirement

A Capstone that demonstrates mastery and application of the subject matter must be completed. Students should meet with their Major Professor to discuss options for the capstone. A comprehensive exam, paper submitted for publication and other scholarly activities may be considered for this requirement.

Students are strongly encouraged to do a presentation of their capstone project. Students who take a comprehensive exam may be exempted from this. A rubric for the evaluation of the capstone and presentation is included in Appendix H. Students should discuss the expectations of the capstone and any related presentations prior to the last semester. Students who do a presentation need to submit an abstract for the topic to the Program Director at least two weeks before the scheduled date to present. The Director will provide this to the faculty, students and other audience members.

After the capstone is completed, the Non-Thesis Requirement Report form is submitted by the Major Professor.

4.6 Application for Advanced Degree

Students must submit an application to graduate through VandalWeb. See Registrar's calendar and university catalog for dates and other details at www.uidaho.edu/registrar.

4.7 Information

Further information on university and general regulations may be obtained from the University of Idaho College of Graduate Studies and the Office of the Registrar.

5.0 M.S. DEGREE REQUIREMENTS & PROCEDURES (THESIS OPTION)

A minimum of 30 credits are required for the M.S. (thesis) degree in Nuclear Engineering. See Curriculum Guide in Appendix E.

- At least 18 credits must be at the 500 level.
- Up to 12 credits may be at 400 level.
- No classes required for the undergraduate degree can be used as part of the graduate program.
- An overall GPA of 3.0 is required for graduation. Each semester, students must earn at least a 3.0 GPA to remain in good standing. In addition, grades for each course on the study plan must be at or above a 3.0 GPA. For further details, review College of Graduate Studies requirements.

The University of Idaho - Idaho Falls maintains a Three Year Plan for the rotation of courses. University of Idaho reserves the right to change the Three Year Plan at any time due to enrollment requirements or other course scheduling issues.

The combined total of transfer credits, non-degree seeking credits, and approved credits more than eight years old at the time the degree is awarded shall not exceed 12 credits for master's programs. It is advisable for students to apply for admission prior to, or early in, their coursework.

Credits earned at an institution that does not grant graduate degrees cannot be transferred to University of Idaho for graduate credit. For questions about the transferability of a course, contact the NE Director or College of Graduate Studies.

Details on the masters study plan including age of credits can be found on the College of Graduate Studies website under the Steps to Degree, Masters Study Plan and Degree Audit at www.uidaho.edu/cogs and in the catalog.

5.1 Program

Students interested in the program should contact the Program Director well in advance of the first registration for a tentative evaluation of educational preparation. Deficiencies in undergraduate course preparation for the graduate program will be identified. Students should review Appendix A and contact faculty with mutual research interests as well as the Program Director.

5.2 Nomination of Major Professor

The student, Program Director, and potential Major Professor should discuss and formalize the nomination of the Major Professor **by the end of the first semester of enrollment**. The nominated Major Professor in conjunction with the student must submit the Appointment of Major Professor and/or Committee Form to the College of Graduate Studies.

5.3 Study Plan

The Study Plan should be prepared **by the end of the second semester of enrollment**. The Major Professor, department and College of Graduate Studies approve the study plan submitted by the student through VandalWeb. The major professor must be listed on VandalWeb, before the plan can be approved. Students are encouraged to create a draft prior to this. Faculty members on the committee are expected to have input on the study plan development. See Curriculum guide in Appendix E.

5.4 Committee

The Committee will be discussed by the student and the Major Professor in consultation with the Program Director. The committee must include:

- ✓ Major Professor (Chair)
- ✓ At least two other committee members to provide breadth and depth to the student's program. The depth and breadth are determined by the student's administrative unit

The Chair must be UI Graduate Faculty. At least one other member must be UI graduate faculty. A member from another institution may be approved if graduate faculty at that institution and if the department determines that he or she is appropriate for the student's committee. At least fifty percent (50%) of the committee members must be members of the UI graduate faculty. See the CoGS website for more details.

Any faculty member in the Nuclear Engineering program may initiate a request for an approval of Adjunct status for an individual currently not listed with the University. Typically, such requests are initiated by a Major Professor for the individual to serve on the thesis/dissertation committees of multiple students. The initiating faculty member must submit a current vita of the individual along with a memo of justification for approval to the Program Director. The Program Director will provide these materials to the faculty within the program, and the adjunct status will be approved with a majority vote of the faculty, and with concurrence of the Dean and Provost. Requests for adjunct status should be submitted as soon as the individual is identified and generally no later than the semester before a student intends to defend the thesis. Individuals approved by the program must also be approved through the university processes before they can be formally added to the committee. No more than one adjunct faculty member can be added to the committee. The committee formed must comply with university and College of Graduate Studies requirements. Approved adjunct faculty can begin service on the committee during the academic semester immediately following the semester approval was gained.

5.5 Thesis Proposal Meeting

The meeting includes an oral presentation of a written thesis proposal and/or progress report to the committee. Committee members will sign and date the front page of the proposal, indicating acceptance. The proposal at a minimum need to address research objectives, timeline and issues and challenges. Any waiver to the need for a proposal meeting must be approved by the Program Director. The proposal meeting is not open to the public.

5.6 Application for Advanced Degree

Students must submit an application to graduate through VandalWeb. See Registrar's calendar and university catalog for dates and other details at www.uidaho.edu/registrar.

5.7 Request to Proceed to Final Defense

After detailed consultations with the Major Professor, the student provides each committee member with a copy of the thesis that will be defended. It is recommended that the committee be given three-four weeks to review the study.

Students must schedule the defense meeting with the committee members and then collect each member's signature on the Request to Proceed with Final Defense Form. The student must submit the signed form to the College of Graduate Studies prior to the defense meeting. It is recommended that the form be in the CoGS Dean's Office at least a week prior to the defense date. The entire committee must participate in the thesis defense. CoGS will send the student and Major Professor the Final Defense Report form and a Repository form with instructions on completion and deadlines for each.

5.8 Thesis Defense

The defense consists of 30 minutes of presentation with professional scholarly slides. After the candidate's presentation, the Major Professor will facilitate questioning of the candidate by the committee. The committee will then deliberate in a private session to determine the outcome of the defense. Upon completion of the deliberation, the candidate will meet with the committee in a private session to learn the committee's decisions on further research or edits needed. If the defense is not acceptable to the majority of the committee, a new defense must be scheduled after the changes are made. A rubric for the evaluation of the master's defense is included in Appendix H.

Thesis presentations are open to the public including other faculty and students. Questioning by the committee is a closed session.

It is imperative that students follow the guidelines and instructions set forth for Thesis Defense. Please review the following on CoGS website prior on to beginning the thesis to ensure compliance with all requirements.

- ✓ Dates and Deadlines
- ✓ Student Resources – Thesis & Dissertation Resources:
    - Starting Tips
    - Proposal Tips
    - ETD Handbook

The student who is defending the thesis must arrange for a videoconference connection that includes all faculty on the student's committee. The student must provide an abstract, copy of the thesis, date/time/location of the defense to the Program Director no later than 10 business days before the meeting. The Program Director will provide this to the faculty, students and other audience members. Any exceptions to these requirements must be approved by the Program Director.

Further information on university and general regulations, including required forms and Graduate Handbook for Theses and Dissertations, is available from the University of Idaho, College of Graduate Studies and the Registrar.

5.9 Pre-Defense Formatting Check and Submission of Final Thesis

Complete instructions for formatting and submission are found in the Thesis and Dissertation Handbook. Students are required to submit the thesis for a formatting check prior to the defense. It is important to follow the instructions to the letter. Electronic Thesis Submission rules can be found on the CoGS website.

Failure to submit in the correct format or by the deadlines may result in the need to register and pay for additional credit.

6.0 PH.D. DEGREE REQUIREMENTS & PROCEDURES

The applicant must satisfy the general requirements for the M.Engr. or M.S. degree in Nuclear Engineering (Appendix E). The additional details of the individual program for the doctoral degree are established by each student's committee in consultation with the student. The general university guidelines require:

- A minimum of 78 credit hours beyond the bachelor's degree
- At least 52 graduate credit hours (500 and above)
- Up to 45 credits can be 600 - Doctoral Research and Dissertation
- At least 39 of the 78 required credits must be after admission to the UI graduate program and be UI courses
- Of the 78 credits submitted to satisfy the degree requirements, a maximum of 30 credits may be more than eight (8) years old when the degree is conferred, provided the supervisory committee determines that the student has kept current in the subjects concerned.
- All other degree requirements must be completed no later than five (5) years after the date on which the candidate passed his/her preliminary examination.

Details on the doctoral study plan including age of credits, limits on transfer credits, limits on thesis credits, etc. can be found on the College of Graduate Studies website under the Steps to

Degree, Doctoral Study Plan and Degree Audit at www.uidaho.edu/cogs. Two examples of the requirements are given below. One example assumes the student completed a Master's thesis option and the other assumes the student completed a non-thesis Masters' option.

Completed Master's Thesis	Non-Thesis Masters
Coursework = 48 credits	**Coursework = 51 credits**
24 credits – M.S. coursework	30 credits – M.Engr. coursework
24 credits – Ph.D. coursework	21 credits – Ph.D. coursework
Research = 30 credits	**Research = 26 credits**
6 credits – M.S. research & thesis	27 credits – Ph.D. research & dissertation
24 credits – Ph.D. research & dissertation	
Total Credits – 78	**Total Credits - 78**

6.1 Ph.D. Program

Students interested in the program should contact the Program Director well in advance of the first registration for a tentative evaluation of educational preparation. Deficiencies in undergraduate course preparation for the graduate program will be identified. Students should review the Faculty Research Areas table (Appendix A) and contact faculty with mutual research interests as well as the Program Director.

6.2 Major Professor

A Major Professor will be suggested by the department faculty at the time of the admissions file review. Matches will be based on the student's requests, academic background and research interests as well as the research initiatives and needs of the faculty. The Major Professor **should be formally appointed during the first semester of doctoral work**.

6.3 Study Plan

The study plan should be prepared **by the end of the second semester of enrollment**. The Major Professor, department and College of Graduate Studies approve the study plan submitted by the student through VandalWeb. The Major Professor must be listed on VandalWeb, before the plan can be approved. Students are encouraged to create a draft prior to this. Faculty members on the committee are expected to have input on the study plan development.

6.4 Doctoral Committee

The student's doctoral committee will be discussed by the student and major professor in consultation with the program director. The Committee must include:

- ✓ Major professor (Chair)
- ✓ Three other committee members to provide breadth and depth to the student's program. The depth and breadth are determined by the student's administrative unit.

The Chair must be UI graduate faculty. It is recommended that students have only four members. An outside member from another institution may be approved if graduate faculty at that institution and if the department determines that he or she is appropriate for the student's committee. At least fifty percent (50%) of the committee members must be members of the UI graduate faculty. See the College of Graduate Studies (CoGS) website for details.

Any faculty member in the Nuclear Engineering program may initiate a request for an approval of Adjunct status for an individual currently not listed with the University. Typically, such requests are initiated by a Major Professor for the individual to serve on the thesis/dissertation committees of multiple students. The initiating faculty member must submit a current vita of the individual along with a memo of justification for approval to the Program Director. The Program Director will provide these materials to the faculty within the program, and the adjunct status will be approved with a majority vote of the faculty and with concurrence of the Dean and Provost. Requests for adjunct status should be submitted as soon as the individual is identified and generally no later than the semester before a student intends to defend the dissertation. Individuals approved by the program must also be approved through the university processes before they can be formally added to the committee. No more than one adjunct faculty member can be added to the committee. The committee formed must comply with university and College of Graduate Studies requirements. Approved adjunct faculty can begin service on the committee during the academic semester immediately following the semester approval was gained.

6.5 Qualifying Examination

The Ph.D. qualifying examination is administered twice a year (typically October and February). Students who have completed a significant amount of doctoral coursework may, after consultation with the Major Professor, request to take the exam. The NE Program Director, in coordination with NE Program Staff, announce the exam about one month prior to the exam. The student should declare his/her intention to take the exam per email. The amount of time from admission to exam will vary based on credit load of the student and prior academic preparation. The exam is designed to evaluate preparation coursework and provide guidance in planning the Ph.D. program. **It primarily tests nuclear engineering knowledge expected of a student degreed from an accredited undergraduate program** as well as those courses at UI

included in the "core" as defined in the curriculum guide (Appendix D). The exam is administered in written form and can have an oral component.

The review committee will consist of at least three persons (UI faculty or adjunct faculty) qualified to examine the student on **traditional nuclear engineering curricular topics** as well as at the advanced undergraduate level of achievement in the following areas and the core (see curriculum guide in Appendix E).

ENERGY

1. Thermodynamics, Heat Transfer, and Fluid Mechanics
2. Course preparation
    a) Engr 320, ME 345
    b) Engr 335 or equivalent

CHEMISTRY & PHYSICS

3. Principles of Chemistry and Modern Physics
4. Course preparation
    a) CHEM 112
    b) PHYS 305 or equivalent

MATHEMATICS

5. Numerical Methods and Computer Programming Language(s)
6. Course preparation
    a) Math 310
    b) Math 275
    c) Additional computer and mathematics experience

The Program Director, in consultation with the Major Professor, will appoint the examiner(s) in each area listed above (items one-six plus the NE "core"). The examining committee can recommend additional courses, for credit or audit, to make up for deficiencies and weaknesses demonstrated. This may necessitate a change to the study plan.

The dates for the examination are determined by the Nuclear Engineering Program Director. Exams dates are usually prior to the midterm of the Fall and Spring semesters.

The results of the Qualifying Examination must be communicated to the Program Director from each examiner. Each student will then be formally notified of the results of his/her exam.

Students who have an earned master's in Nuclear Engineering may request that the masters be used to satisfy the qualifying exam requirement.

6.6 Preliminary Examination

When a majority of the course requirements on the study plan have been completed, a preliminary exam, oral and/or written, will be given under the direction of the student's Major Professor. In Nuclear Engineering, the Committee administers this examination with emphasis on the course work in the major area and the student's research proposal. All committee members must participate in the examination.

If deemed necessary by the student's committee, the student may also be required to complete an eight hour written examination on graduate level concepts in either open or closed book form at the discretion of the supervisory committee or a two-hour oral examination may be taken. Broad areas to be covered are those listed in the study plan and any deficiencies or weaknesses determined by the qualifying exam. Upon successful completion of the exam, the student is advanced to candidacy.

6.7 Dissertation Proposal Meeting

The meeting includes an oral presentation of a written dissertation proposal and/or progress report to the committee. Committee members will sign and date the front page of the proposal, indicating acceptance. The proposal at a minimum need to address research objectives, timeline and issues and challenges.

The presentation of the doctoral proposal and the preliminary examination may, at the committee's discretion, occur at the same time and in a condensed time frame. The entire committee must participate in the dissertation proposal meeting.

The proposal meeting is not open to the public.

6.8 Report of Preliminary Examination & Advancement to Candidacy Form

This form will be completed and submitted to the College of Graduate Studies by the Major Professor on completion of the exam and proposal meeting.

6.9 Application for Advanced Degree

Students must submit an application to graduate on VandalWeb. See Registrar's calendar and university catalog for dates and other details at www.uidaho.edu/registrar.

6.10 Request to Proceed to Final Defense

After detailed consultations with the major professor and the committee, the candidate provides each committee member with a copy of the dissertation that will be defended. It is recommended that the committee be given four-six weeks to review the study.

Students must schedule the defense meeting with the committee members and then collect each member's signature on the Request to Proceed with Final Defense Form. The student must submit the signed form to the College of Graduate Studies **ten (10) business days** prior to the defense meeting. The entire committee must participate in the dissertation defense. CoGS will send the student and Major Professor the Final Defense Report form and a Repository form with instructions on completion and deadlines for each.

6.11 Doctoral Dissertation Defense

The defense consists of 30 to 45 minutes of presentation with professional scholarly slides. After the candidate's presentation, the Major Professor will facilitate the questioning of the candidate by the committee. The committee will then deliberate in a private session to determine the outcome of the defense. Upon completion of the deliberation, the candidate will meet with the committee in a private session to learn the committee's decisions on further research or edits needed. If the defense is not acceptable to the majority of the committee, a new defense must be scheduled after the changes are made. A rubric for the evaluation of the doctoral defense is included in Appendix G.

Dissertation presentations are open to the public including other faculty and students. Questioning of the candidate by the committee is a closed session.

It is imperative that students follow the guidelines and instructions set forth for Thesis Defense. Please review the following on CoGS website prior on to beginning the thesis to ensure compliance with all requirements.

- ✓ Dates and Deadlines
- ✓ Student Resources – Thesis & Dissertation Resources:
    - Starting Tips
    - Proposal Tips
    - ETD Handbook

The student who is defending the dissertation must arrange for a videoconference connection that includes all faculty on the student's committee. The student must provide an abstract, copy of the dissertation, date/time/location of the defense to the Program Director no later than 10 business days before the meeting. The Program Director will provide this information to the faculty, students and other audience members. Any exceptions to these requirements must be approved by the Program Director.

Further information on university and general regulations, including required forms and Graduate Handbook for Theses and Dissertations, is available from the University of Idaho, College of Graduate Studies and the Registrar.

6.12 Pre-Defense Formatting Check and Submission of Final Dissertation

Complete instructions for formatting and submission are found in the Graduate Handbook for Theses and Dissertations. Students are required to submit the thesis for a formatting check prior to the defense. It is important to follow the instructions to the letter.
Electronic Thesis Submission rules can be found on the ETD website.

Failure to submit in the correct format or by the deadlines may result in the need to register and pay for additional credits.

7.0 INTERNATIONAL STUDENTS

International graduate students must carry nine (9) credit hours per semester to be in compliance with the rules and regulations of the U.S. Immigration Service. The University of Idaho International Programs Office is available to answer questions about this requirement.

Alice Allen
Designated School Official, Director, Recruitment & Student Engagement - Idaho Falls
(208) 757-5452
alicew@uidaho.edu

Dana Brolley
International Student, Scholar and Faculty Services Director
(208) 885-8945
888-884-3246 (toll free from within the U.S.)
danab@uidaho.edu

8.0 GRADUATE COURSE OFFERINGS

University of Idaho (UI) and Idaho State University (ISU) cooperate in supporting the graduate degree programs and course offerings at both institutions. UI graduate students may enroll in ISU nuclear engineering courses for which they have met prerequisites. Students must have approval of their major professor prior to enrolling in a course. Contact Student Services in Idaho Falls for instructions on enrolling.

Most courses offered at the University of Idaho in Idaho Falls are in the evening and are held in the Center for Higher Education (CHE) or the Tingey Administration Building (TAB). Courses may be offered as live, web based, hybrid, virtual or through Engineering Outreach.

8.1 Graduate Academic Certificate

University of Idaho offers graduate academic certificates that can be added to, or completed in conjunction with, a masters or doctoral degree. Students in the NE program are encouraged to review the requirements for the Nuclear Criticality Safety, Nuclear Technology Management, and Nuclear Decommissioning and Used Fuel Management certificates and discuss the applicability of each to their individual study plan with their Major Professor. Course information is listed in Appendix D. Details on the regulations for certificates as well as other certificate options, are available in the general catalog, located on the Registrar's Office website.

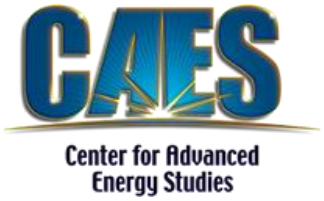
9.0 RESEARCH & TEACHING ASSISTANTSHIPS

Competitive research and instructional assistantships may be available to fully admitted full-time students in good academic standing. Funding is limited and varies from semester to semester. Early application for admission is strongly recommended. After admission, contact the Program Director for application details. Students must meet milestone performance expectations and make academic progress in order for funding to continue. If funding concludes and student hasn't graduated, student is responsible for cost of attendance for each semester after.

Assistantships are very competitive at the University of Idaho. Funding for projects is very limited. Assistantships can only be offered to admitted students. It is important to stay in close contact with the Program Director if you have interest in an assistantship. Graduate assistants are paid hourly for hours worked and in most cases tuition, fees and health insurance are paid for the student as well. This compensation is intended to allow the student to maintain a basic standard of living while completing their graduate studies.

Students on assistantship must be enrolled in a minimum of nine credit hours during the Fall and Spring semesters and work 20 hours per week on their funded research project. Students who accept an assistantship are expected to enroll in a one credit seminar (INTR 501 GASSP) designed to increase success in the assistantship and degree program. Assistantships are a job and hours are separate from coursework and thesis/dissertation research. During the Summer session graduate assistants may be hired as temporary help and may be eligible to work up to a full 40 hours per week. Summer registration for Master's Research and Thesis (500) or Doctoral Research and Dissertation (600) is expected of all graduate students who are working on the thesis or dissertation. International students should consult with their advisor and International Programs regarding the number of credits required for summer registration.

10.0 CENTER FOR AVANCED ENERGY STUDIES (CAES)



The Center for Advanced Energy Studies (CAES) is a research and education consortium between Idaho National Laboratory, Boise State University, Idaho State University, University of Idaho and University of Wyoming. Headquartered in Idaho Falls, with complementary capabilities and programs at each of the participating universities, CAES works to solve regional energy challenges that have national impact. CAES research, capabilities, talent and infrastructure emphasize work in focus areas including advanced nuclear energy systems, advanced manufacturing, energy-water nexus, innovative energy systems and cybersecurity.

CAES affiliated institutions provide:

RESEARCH that delivers innovative, cost-effective and credible solutions that meet the demands of a carbon-constrained world.

EDUCATION that inspires the next generation of engineers, policy makers and the public to pursue careers in science, technology, engineering and math.

POLICY that facilitates an informed dialogue involving the scientific community, the public, and government; leading to energy policy at a regional, state and national level.

APPENDIX A
NUCLEAR ENGINEERING AND RELATED PROGRAM FACULTY RESEARCH AREAS

Christensen, Richard N. PhD, Professor and Program Director, Nuclear Engineering Program, Nuclear Engineering & Industrial Management
(208) 533-8102, rchristensen@uidaho.edu
Design, fabrication & testing of heat exchangers for advanced reactors, single & two phase flow, heat transfer

Arcilesi, David, Ph.D., Assistant Professor, Mechanical Engineering
(208) 533-8107, darcilesi@uidaho.edu
Thermal hydraulics, heat transfer, scaling analyses, experiments

Bernards, Matthew, Ph.D., Associate Professor, Chemical & Biological Engineering
(208) 885-2150, mbernards@uidaho.edu
Biology-material interfacial interactions, biology-material interfacial interactions, bone tissue engineering, beta-votaic microbatteries

Borrelli, Robert, Ph.D., Assistant Professor, Nuclear Engineering & Industrial Management
(208) 533-8122, rborrelli@uidaho.edu, @TheDoctorRAB
Safeguards-by-design, fuel cycle analysis, modeling, scientific computing, risk assessment, nuclear hybrid energy system design, fuel cask design & analysis, nuclear system data analytics, cybersecurity

Charit, Indrajit, Ph.D., Professor, Director of Materials Science & Engineering Program
(208) 885-5964, icharit@uidaho.edu
Nuclear materials, radiation effects, high temperature materials, microstructure-properties correlations

Choudhury, Samrat, Ph.D., Assistant Professor, Chemical & Biological Engineering
(208) 885-7085, samrat@uidaho.edu
Structural nuclear materials, nuclear fuels, machine learning, multi-scale modeling of materials, photovoltaic and alloy design

Haney, Michael, Ph.D., Assistant Professor, Computer Science/Cybersecurity
(208) 533-8209, mhaney@uidaho.edu
Human-cyber-physical systems (industrial control protocols, digital instrumentation & control), cybersecurity for nuclear, power & water systems, computer & network security, digital forensics, active defenses, critical infrastructure resilience

Hiromoto, Robert, Ph.D., Professor, Computer Science
(208) 533-8119, hiromoto@uidaho.edu
Parallel algorithms, communication protocols for UAV's, secure wireless networks

McKellar, Michael, Ph.D., Assistant Research Professor and Director, Industrial Technology
(208) 757-5431, mmckellar@uidaho.edu
Model of thermal and chemical processes, food processing, process heat applications & power conversion with nuclear micro-reactors, heat exchangers

Ostrom, Lee, Ph.D., Professor of Engineering, Center Executive Officer
(208) 757-5427, ostrom@uidaho.edu
Nuclear safety, risk assessment, project management

Qiang, You, Ph.D., Professor of Physics
(208) 885-7558, youqiang@uidaho.edu
Nanomaterials & nanotechnology for nuclear energy, advanced magnetic separation nanotechnology for spent nuclear fuel recycling, neutron radiation detection & instrumentation, nuclear radiation shielding

Raja, Krishan, Ph.D., Associate Professor, Chemical & Biological Engineering
(208) 301-2949, ksraja@uidaho.edu
Degradation of nuclear structural materials, non-destructive materials evaluation & electrochemistry of molten salt reprocessing

Roberson, Dakota, Ph.D., Assistant Professor, Electrical & Computer Engineering
(208) 533-8120, dacotar@uidaho.edu
Power system stability and security, high performance control, renewable energy integration, estimation & detection

Smith, Robert, Ph.D., Distinguished Professor of Subsurface Science
(208) 885-2560, smithbob@uidaho.edu
Aqueous biogeochemistry, Groundwater contamination remediation, Nuclear waste disposal and management, Geological Carbon Sequestration, Geothermal Energy

Utgikar, Vivek, Ph.D., Professor, Chemical and Biological Engineering
(208) 885- 6970, vutgikar@uidaho.edu
Hydrogen & energy systems, advanced fuel cycles, energy storage

Zhao, Haiyan, Ph.D., Associate Professor, Chemical and Biological Engineering
(208) 533-8123 haiyanz@uidaho.edu
Catalysis for environment and fuels, electrochemistry, corrosion, molten salts/ionic liquids, pyro processing, fuel cycle, waste form

APPENDIX B
FORMS, HANDBOOKS & LINKS

Admissions-Graduate	www.uidaho.edu/admissions/graduate
BBLearn	https://bblearn.uidaho.edu/
Center for Advanced Energy Studies (CAES)	https://caesenergy.org/
College of Graduate Studies (COGs)	www.uidaho.edu/cogs/
Dates and Deadlines _ Register's Office	www.uidaho.edu/registrar/calendar
Dates and Deadlines _ College of Graduate Studies	www.uidaho.edu/cogs/deadlines
Graduate Certificates	www.uidaho.edu/registrar/classes/catalogs
Electronic Thesis/Dissertations (ETD)	www.uidaho.edu/cogs/student-resources/thesis-dissertation/etd
Engineering Outreach (EO)	https://eo.uidaho.edu/
General Catalog	www.uidaho.edu/registrar
Graduate Record Exam	www.gre.org
Graduate Forms, Guides & Handbooks	www.uidaho.edu/cogs
Idaho National Laboratory (INL)	www.inl.gov/
International Programs Office	www.uidaho.edu/academic-affairs/ipo
Learning Outcomes UI	www.uidaho.edu/learningoutcomes
Registrar's Office	www.uidaho.edu/registrar
Student Code of Conduct	www.uidaho.edu/student-affairs/dean-of-students/student-conduct/student-code-of-conduct
UI Idaho Falls	www.uidaho.edu/idaho-falls
UI Idaho Falls Three Year Plan	www.uidaho.edu/idaho-falls/student-services
University of Idaho-Idaho Falls Class Schedule	www.uidaho.edu/idaho-falls/student-services
University Research Office	www.uidaho.edu/research
TOEFL	www.ets.org/toefl
Vandal Accounts	www.vandalsetup.uidaho.edu
Vandal Mail	https://vandals.uidaho.edu/
Vandal Web	vandalweb.uidaho.edu/

APPENDIX C
LEARNING OUTCOMES

Nuclear Engineering - M.S., M.Engr.

- Students in the program will be able to communicate professionally and effectively in written and oral presentations to a technical audience.
- Students in the program will be able to identify and analyze engineering problems through multidisciplinary approaches as collaborative problem solvers who can synthesize and apply advanced mathematics, science and engineering.
- Students in the program will be able to be effective nuclear engineers capable of utilizing existing research as the basis for making sound decisions to carry an engineering project through the conceptual, design and implementation phases and perform original scholarly work that considers the impact of the application of both new and existing research on society.
- Students in the program will demonstrate awareness of the global nature of the practice of nuclear engineering and be responsible for the role that they play in enhancing the quality of life of the global community while continually striving for an openness to lifelong learning.
- Students in the program will practice ethical leadership in seeking collaborative solutions and fostering respect for diversity of thought by actively participating in initiatives that add to the body of knowledge and practice and that engages the future generation of engineers.

Nuclear Engineering - Ph.D.

- Students in the program will be able to identify and analyze engineering problems through multi-disciplinary approaches as collaborative problem solvers who can synthesize and apply advanced mathematics, science and engineering.
- Students in the program will be effective nuclear engineers capable of utilizing existing research as the basis for making sound decisions to carry an engineering project from through the conceptual, design and implementation phases and perform original scholarly work that considers the impact of the application of both new and existing research on society.
- Students in the program will communicate professionally and effectively in written and oral presentations to a technical audience.
- Students in the program will demonstrate awareness of the global nature of the practice of nuclear engineering and be responsible for the role that they play in enhancing the quality of life of the global community while continually striving for an openness to lifelong learning.
- Students in the program will practice ethical leadership in seeking collaborative solutions and fostering respect for diversity by actively participating in initiatives that add to the body of knowledge and practice and engages the future generation of engineers.

APPENDIX D

ACADEMIC CERTIFICATES

A grade of B or higher is required in all coursework for academic certificates. Review the information in the general catalog (O-10-b) for other regulations.

Nuclear Criticality Safety Graduate Academic Certificate

- NE 450 Principles of Nuclear Engineering
- NE 535 Nuclear Criticality Safety
- NE 555 Nuclear Criticality Safety II
- One of the following:
    - NE 554 Radiation Detection and Shielding
    - Upper-Division or Graduate level Mathematics course

Nuclear Decomissioning and Used Fuel Management Graduate Academic Certificate

Before pursuing this certificate, students must have completed NE 450 Principles of Nuclear Engineering or have previous professional nuclear experience such as nuclear navy or a commercial power plant.

- NE 516 Nuclear Rules and Regulations
- NE 554 Radiation Detection and Shielding
- NE 582 Spent Nuclear Fuel Management and Disposition
- NE 587 Nuclear Decommissioning

Nuclear Technology Management Graduate Academic Certificate

- INDT 434 Power Generation and Distribution
- NE 527/TM 527 Nuclear Material Storage, Transportation and Disposal
- NE 528/TM 528 Management of Nuclear Facilities
- NE 514/TM 514 Nuclear Safety
- NE 516/TM 516 Nuclear Rules and Regulations
- One of the following:
    - NE 450 Principles of Nuclear Engineering (required for TM majors)
    - TM 520 Leadership and Conflict Resolution in a Technological Environment (required for NE majors)

APPENDIX E

CURRICULUM GUIDE

Masters students must complete the listed courses. Doctoral students must complete any of the courses that were not included in their masters degrees.

Nuclear Engineering

University of Idaho
College of Engineering

MASTERS DEGREE – NUCLEAR ENGINEERING

Required Core Courses – 18 credits*

AREA		COURSE
Foundations	NE 450	Principles of Nuclear Engineering*
Thermal Hydraulics	NE 520	Thermodynamics of Nuclear Power Plants
Materials	NE 538	Nuclear Materials
Neutronics	NE 544	Reactor Analysis – Statics & Kinetics
Radiation	Ne 554	Radiation Detection & Shielding
Fuel Cycles	NE 585 or NE 582	Nuclear Fuel Cycles or Spent Nuclear Fuel Management and Disposition
Capstone	NE 575	Adv Nuclear Power Engineering

*Leveling course, required in addition to the 18 core credits. Students with a bachelor's in NE may request a waiver of this requirement.

M.S. – Thesis Option

2-3 Electives (6-9 credits)

NE 500 Masters Research & Thesis (6 credits)

M.Engr. – Non-Thesis Option

3 Electives (9 credits)

NE 599 Master's Project (3 credits)

University of Idaho
Idaho Falls

uidaho.edu/nuclear 208-757-5500 1784 Science Center Drive nuclear@uidaho.edu

APPENDIX F
MASTERS PLANNER

Item	Semester
Admission to College of Graduate Studies	
Appointment of Major Professor	
Appointment of Committee	
Study Plan	
Proposal Defense	
Application to Graduate	
Request to Proceed to with Final Defense	
Final Defense and Submission	
Annual Progress Review	
Annual Progress Review	

Course	Title	Category	Credits
NE 450	Principles of Nuclear Engineering	Leveling	3
NE 520	Thermodynamics of Nuclear Power Plants	Core	3
NE 538	Nuclear Materials	Core	3
NE 544	Reactor Analysis (Neutronics)	Core	3
NE 554	Radiation Detection & Shielding	Core	3
NE 582 or NE 585	Nuclear Duel Management and Disposition or Nuclear Fuel Cycles	Core	3
NE 575	Adv. Nuclear Engineering Design	Core	3
	Masters Focus	Elective	3
	Masters Focus	Elective	3
	Masters Focus	Elective	3
NE 500/599	Masters Research	Research	

Masters Course Planner:

Course	Title	Semester Taken	Transfer Y/N

Publications	Title	Journal	Date
Presentations and Posters	**Title**	**Location**	**Date**
Scholarships	**Name**	**Amount**	**Date**
Funding	**Name/Agency**	**Amount**	**Date**
Internships	**Title**	**Location**	**Date**
Volunteer Activities	**Event**	**Sponsor**	**Date**
Professional Organizations	**Organizational Name**		**Date**
Awards	**Title**	**Sponsor**	**Date**

APPENDIX G
DOCTORAL PLANNER

Item	Semester Completed
Admission to College of Graduate Studies	
Appointment of Major Professor	
Appointment of Committee Member 1	
Appointment of Committee Member 2	
Appointment of Committee Member 3	
Qualifying Exam	
Study Plan	
Preliminary Exam	
Proposal Defense	
Advancement to Candidacy	
Application to Graduate	
Request to Proceed to with Final Defense	
Final Defense and Submission	
Annual Progress Review	
Annual Progress Review	
Annual Progress Review	
Annual Progress Review	

Course	Title	Category	Credits
NE 450	Principles of Nuclear Engineering	Leveling	3
NE 520	Thermodynamics of Nuclear Power Plants	Core	3
NE 538	Nuclear Materials	Core	3
NE 544	Reactor Analysis (Neutronics)	Core	3
NE 554	Radiation Detection & Shielding	Core	3
NE 582 or NE 585	Nuclear Duel Management and Disposition or Nuclear Fuel Cycles	Core	3
NE 575	Adv. Nuclear Engineering Design	Core	3
	Masters Focus	Elective	3
	Masters Focus	Elective	3
	Masters Focus	Elective	3
	Doctoral Focus	Elective	3
	Doctoral Focus	Elective	3
	Doctoral Focus	Elective	3
	Doctoral Focus	Elective	3
	Doctoral Focus	Elective	3
	Doctoral Focus	Elective	3
	Doctoral Focus	Elective	3
	Additional Doctoral Coursework		
NE 600	Doctoral Research & Dissertation	Research	

PHD Course Planner:

Course	Title	Semester Taken	Transfer Y/N

Publications	Title	Journal	Date
Presentations and Posters	**Title**	**Location**	**Date**
Scholarships	**Name**	**Amount**	**Date**
Funding	**Name/Agency**	**Amount**	**Date**
Internships	**Title**	**Location**	**Date**
Volunteer Activities	**Event**	**Sponsor**	**Date**
Professional Organizations	**Organizational Name**		**Date**
Awards	**Title**	**Sponsor**	**Date**

APPENDIX H

M. Engr. Nuclear Engineering Project Evaluation Form

Student _____ Date _____

Evaluator _____

Evaluator instructions: Please complete the **Project Evaluation Rubric** below. The communication section refers to either written reports or oral presentations.

	Project Evaluation Rubric *(check one box in each row)*		**4** Excellent	**3** Good	**2** Satisfactory	**1** Needs Improvement
CONTENT	**Research**	Historical and modern approaches to problems found and considered.				
CONTENT	**Methods**	Engineering analysis and/or experimental approaches applied.				
CONTENT	**Results and/or Deliverables**	Delivered solutions, analysis, and/or deliverables.				
DELIVERY	**Organization**	Logically ordered for intended purpose with effective transitions between topics, sections and chapters.				
DELIVERY	**Visual Aids**	Graphics and/or figures as tools for communicating project concepts.				
DELIVERY	**Style**	Language and style conveys meaning to audience.				

MS and PHD Nuclear Engineering Defense Presentation and Thesis /Dissertation Evaluation Form

Student _____ Date _____

Evaluator _____

Evaluator instructions: Please complete the **Defense Presentation Evaluation Rubric** below and the **Thesis Evaluation Rubric** on the following page.

	Defense Presentation Evaluation Rubric *(check one box in each row)*		**4** Excellent	**3** Good	**2** Satisfactory	**1** Needs Improvement
CONTENT	**Context**	Understanding of context, audience and purpose.				
CONTENT	**Organization**	Organized for intended purpose, transitions between topics.				
CONTENT	**Evidence**	Weaves together data and analysis to support conclusions.				
DELIVERY	**Visual Aids**	Graphics are tools for communicating presentation concepts.				
DELIVERY	**Style**	Language and style conveys meaning to audience.				

	Thesis Evaluation Rubric *(check one box in each row)*		**4** Excellent	**3** Good	**2** Satisfactory	**1** Needs Improvement
CONTENT	**Originality**	Original treatment of, or new perspective on, the topic.				
	Research Approach	Research approach builds on previously published works, combining effective methods with novel and/or modern approaches.				
	Results	Data collection and assessment results are clear and logical, supporting the goals of the paper.				
	Scholarship	Content reviews and builds on appropriate prior work.				
	Relevance	The paper conveys the significance of its contribution.				
FOCUS	**Goals**	The goals are developed and explicitly stated.				
	Order	The order in which ideas are presented is clear, logical and effective.				
	Conclusions	The conclusions are supported by the data.				
LANGUAGE	**Style**	The paper is clear, concise, consistent, and is easy to read and understand.				
	Mechanics	The writing is absent of grammar and/or spelling errors.				