Stevens Institute of Technology

School of Business

**AACSB  
ASSURANCE OF LEARNING PLAN**

**D R A F T**

**Interdisciplinary**

**Doctor of Philosophy in Data Science**

**(Ph.D.)**

**Interdisciplinary PhD in Data Science Vision**We are recognized as a world-class program in data science that prepares graduates for research careers in industry or academia.

February 10, 2019

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# INTRODUCTION: PhD ASSURANCE OF LEARNING PLAN

The **PhD in Data Science** is an interdisciplinary program managed jointly by the School of Engineering and Sciences and the School of Business. The program prepares students for research careers in academia or industry that involve the use of methods and systems for extracting insights from rich data sets, especially as applied to the fields of finance and the life sciences. The program responds to the demand by industry for data scientists with a deep knowledge of the theories, techniques and applications associated with “Big Data” and artificial intelligence. The program also recognizes the broad range of skills needed to successfully apply the tools of the digital revolution in industry. This is reflected in the four core areas of (1) mathematical and statistical modeling, (2) machine learning and artificial intelligence, (3) computational systems, and (4) data management at scale, all of which provide a strong foundation for a thorough understanding of (5) a field of application.

Programs of study in two application areas, Financial Services and Life Sciences, are described in the Stevens Catalog. Students may design a program of study in another field of application with support of their advisor and approval of the department chair/program director.

To make progress on leading-edge subjects in a fast-moving field like data science requires full-time study. Accordingly, students are admitted only for full-time on-campus study.

*Admission Requirements.* The PhD in Data Science is primarily designed for students with technical backgrounds. e.g., an undergraduate or master’s degrees in computer science, computer engineering, business analytics, science or engineering from Stevens or other universities. Applicants to the program must fulfill the following requirements:

* A 4-year undergraduate degree from an accredited college or university.
* International students for whom English is a second language must demonstrate English language proficiency by submitting the results of a TOEFL or an IELTS test.
* GMAT or GRE test scores not older than 5 years.

**PhD Degree Requirements**

The PhD in Data Science requires 84 credits beyond the bachelor’s degree. A prior master’s degree may be transferred for up to 30 credits without specific course descriptions. The remaining 54 credits must include at least 12 credits of core courses, a minimum of 9 credits of field-specific courses and a minimum of 15 dissertation credits. Approval to enter the PhD in Data Science is generally only given when a student has completed work equivalent to a master’s degree. Expected prerequisites include proficiency in statistics and probability, linear algebra, data management and a programing language.

**STRUCTURE OF THE PH.D. PROGRAM IN DATA SCIENCE**

**Core Courses (Minimum of 12 and maximum of 24 credits)**

To acquire the breadth of knowledge necessary for successful research in data science, students must complete at least one and at most three courses in each of the following four core areas. Students who demonstrate competency in the topics covered by a core course may, with permission of their advisor, waive the core course and take an approved elective in its place. Students are also required to take the doctoral signature course PRV 961 and MGT719 Research Methods.

*1. Mathematical and Statistical Modeling*

BIA 652 Multivariate Analytics

FE 542 Time Series with Applications in Finance

MA 661 Stochastic Optimal Control & Dynamic Programming

*2. Machine Learning and Artificial Intelligence*

BIA 656 Statistical Learning & Analytics

CS 541 Artificial Intelligence

CS 559 Machine Learning: Fundamentals and Applications

FE 690 Advanced Financial Analytics

*3. Data management at Scale*

BIA 678 Big Data Technologies

CS 522 Mobile Systems and Applications

CS 609 Data Management and Exploration on the Web

*4. Computational Systems*

BIO 668 Computational Biology (for Life Sciences majors)

FE 595 Financial Systems Technology (for Finance majors)

CS 549 Distributed Systems and Cloud Computing

CS 600 Advanced Algorithm Design and Implementation

5. *Signature Doctoral Course (3 credits)*

PRV961 Doctoral Signature Credit Seminar/Project/TA

*6. Research Methodology (3 credits)*

MGT 719 Research Methods

Students who demonstrate competency in the subject area of a particular core course may waive the course with the permission of their advisor and the program director.

**Application (Major) Area (Minimum of 9 and maximum of 21 credits)**

Depending on their major area of study, and with approval of their advisor, students choose at least three courses from electives in one of the following areas: *Financial services, Life sciences, or another approved area.* Approved courses in each major area as well as approved general electives are listed in Stevens Catalog.

# PhD Learning Goals

The program’s primary objective is to prepare students to pursue an academic career or a career in a research environment. The interdisciplinary nature of the program and the curriculum design allow a great deal of flexibility in the choice of courses to satisfy the degree.

The Learning Goals for the PhD in DS program are listed in Table 1.

**Table 1: Ph.D. Program Learning Goals**

Table 1: PhD Learning Goals

|  |
| --- |
| Learning Goals/ Skill Sets |
| PhD-1: Ph.D. graduates can effectively communicate research in oral presentations. |
| PhD-2: Ph.D. graduates will have sufficiently mastered the core knowledge and tools needed to conduct original research in a timely manner. |
| PhD-3: Ph.D. graduates are able to effectively deliver academic courses in a university environment. |

# PhD ASSURANCE OF LEARNING ASSESSMENT PLAN

**Table 2: PhD ASSURANCE OF LEARNING ASSESSMENT PLAN - GOALS 1 through 3**

|  |  |  |  |
| --- | --- | --- | --- |
| **PhD LEARNING GOAL** | **Where and when measured?** | **How measured?** | **Criterion** |
| **PhD-1: Ph.D. graduates can effectively communicate research** **in oral presentations.** | Student must present a research paper as part of the qualifying examination process.  Preliminary exam early in fall of 2nd year and qualifying exam early in fall of 3rd year | Students will be evaluated during the preliminary and qualifying exams by an examining faculty committee  Sampling: All PhD students | For the preliminary and qualifying exams, students must achieve a score of at least 3 out of a possible maximum of 5 |

|  |  |  |  |
| --- | --- | --- | --- |
| PhD-2: Ph.D. graduates will have sufficiently mastered the core knowledge and tools needed to conduct original research in a timely manner. | Students must produce a first-year paper as part of the preliminary exam early in fall of 2nd year.  Students must complete an academic paper worthy of submission to a top academic journal as part of the qualifying exam early in fall of their 3rd year.  Dissertation proposal defense before the end of 4 years of full-time study. | Sampling: All PhD students.  Each of the two papers will be evaluated by an examining faculty committee.  Dissertation proposal will be evaluated by dissertation committee. | Each paper must be evaluated as at least satisfactory.  Proposal should be accepted by dissertation committee. |
| PhD-3: Ph.D. graduates are able to effectively deliver academic courses in a university environment. | After each taught course is completed. | Sampling: All PhD students.  Course/teacher evaluations. | Achieve a mean course & instructor evaluation score of at least 3.0 out of max 4.0 |

# Ph.D. CURRICULUM ALIGNMENT MAP

Because students (with approval of their advisor) may take many different paths through the program, Table 3 provides a general statement of how the courses listed above in the four core areas and the approved electives for the program support the learning goals.

**Table 3: PhD Relation of Learning GOALS to Curriculum**

Table 3: Ph.D. Curriculum Alignment Map

|  |  |
| --- | --- |
| Learning Goals/ Skill Sets | Corresponding Educational Experiences |
| PhD-1: Ph.D. graduates can effectively communicate research in oral presentations. | Most courses involve individual and team presentations and require students to write research papers involving critical evaluations of literatures.  Preliminary and qualifying exams require research papers and their oral presentation. |
| PhD-2: Ph.D. graduates will have sufficiently mastered the core knowledge and tools needed to conduct original research in a timely manner. | All required Ph.D. courses (seven) address specific research methods or specific research areas related to business. Preliminary and qualifying exams require original research papers and their oral presentation. |
| PhD-3: Ph.D. graduates are able to effectively deliver academic courses in a university environment. | A teaching policy defining the different steps of teaching training is implemented. Specific teaching seminars are integrated into the process. |

The curriculum alignment map in Table 4 below focuses on the core courses that must be completed by all PhD in DS students.

**Table 4: Ph.D. Business Administration Curriculum Alignment Map**

|  |  |  |  |
| --- | --- | --- | --- |
| **Goals/** | **PhD-1: Ph.D. graduates can effectively communicate research in oral presentations.** | **PhD-2: Ph.D. graduates will have sufficiently mastered the core knowledge and tools needed to conduct original research in a timely manner.** | **PhD-3: Ph.D. graduates are able to effectively deliver academic courses in a university environment.** |
| **COMMON CORE COURSES** | |
| MGT719 Research Design  Prof. Lee | Students present a research design that is related to their dissertation research. | Students work on specific problems and learn the different methods of research design. |  | |
| MGT801 Independent Study | Students learn to present their research paper. | Students work with advisor on specific research paper. |  | |
| PRV 961 | Students learn how to communicate and give presentations. |  |  | |

# 

# PhD IN DS LEARNING GOALS, OBJECTIVES AND RUBRICS

**PhD Goal-1:** *Ph.D. graduates can effectively communicate research in oral presentations.*

Oral presentation skills will be assessed as part of the preliminary examination taken after one year of full-time study (or its equivalent, for part-time students), at the qualifying examination taken after the second year of full-time study (or its equivalent, for part-time students) and at the dissertation defense.

**Table 4: PhD Learning Goal 1, Objectives and Rubrics**

|  |  |
| --- | --- |
| **PhD-1** | **Learning Goal, Objectives and Traits** |
| **GOAL [Lechler]** | Ph.D. graduates can effectively communicate research in oral presentations. |
| **Objective 1:** | *Students will be able to deliver oral presentations effectively* |
| Trait 1: | Organization and logic |
| Trait 2: | Voice quality and body language |
| Trait 3: | Use of slides to enhance communication |
| Trait 4: | Ability to answer questions |

**APPENDIX A contains the template for collecting data for Goal 1, Objective 1 using the following Presentation Rubric.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Presentation Rubric**  *Students will be able to deliver oral presentations effectively.* | | | | |
| **Trait** | **Poor (0)** | **Good (5)** | **Excellent (10)** | **Score** |
| **Trait 1:  Organization & Logic** | Fails to introduce topic; no evidence of or poor logical flow of topic. | Prepares listeners for sequence and flow of topic. Loses place occasionally but flow and structure are still clear. | Engages listeners with overview, guides listeners through connections between sections, and alerts audience to key details and concepts. |  |
| **Trait 2: Voice Quality** | Cannot be heard or understood well due to volume, mumbling, speed, monotone delivery, and/or heavily accented English. | Clear delivery with well-modulated voice. Displays some confidence and enthusiasm, but may also contain flatter periods or sound overly rehearsed. | Exemplary delivery, with a voice that sounds fully engaged, conveys enthusiasm and confidence, and relates to the audience well. |  |
| **Trait 2: Body Language** | Turns away from audience or uses distracting gestures, such as pacing or tugging clothing. Speaker seems stiff, awkward or uncomfortable. Little eye contact. | Speaker is relaxed in front of the room and keeps distracting movements and gestures to a minimum. Generally faces audience and makes eye contact. | Speaker’s body language is superb and fully engages the room. Strong, consistent eye contact to the entire audience. Uses confident gestures to underscore key verbal points. |  |
| **Trait 3**  **Use of slides to enhance communication** | Misspelled, too busy, too much text, too many slides for allotted time, and/or poor use of graphics like charts. | Slides are readable, containing a reasonable amount of material per slide. Good use of graphics or illustrations. | Slides are well written/designed, engaging to the audience, and used as support to verbal content presentation. |  |
| **Trait 4**  **Ability to answer questions** | Transitions are awkward or non-existent. Speakers go over time limits. Answers are disorganized or non-responsive. | Transitions are smooth. Speakers generally stay within time limits. Speakers respond to questions well and provide sufficient response. | Transitions are professional and very smooth. Speakers respond convincingly and address all aspects of question. |  |
| **Does not meet expectations: 0 – 19; Meets: 20-35; Exceeds: 36-50 Total Score:** | | | |  |

**PhD-2:** *Ph.D. graduates will have sufficiently mastered the core knowledge and tools needed to conduct original research in a timely manner.*

The goal is to ensure that students will have the skills necessary to complete high-quality, original dissertations within 4 years of full-time study (the max. allowed time span to finish a dissertation is 6 years). There is not a specific timeline when the students should finish their proposal but a delay of a proposal correlates highly with a delay of the dissertation defense and extends the doctoral studies.

The first objective is that the students are able to write competitive research papers. The second objective is that students will successfully defend their dissertation proposal before the end of 3 years of full-time study.

**Appendix B** contains a copy of the “Doctoral Activity Report,” which is administered annually and is used to collect data relevant to the assessment of Ph.D. goal 2.

**Table 5: PhD Learning Goal 2, Objectives and Rubrics**

|  |  |
| --- | --- |
| **PhD - 2** | **Learning Goal, Objectives and Traits** |
| **GOAL [Lechler]** | Ph.D. graduates will have sufficiently mastered the core knowledge and tools needed to conduct original research in a timely manner. |
| **Objective 1:** | *Students are able to write competitive, original research papers* |
| Trait 1: | Satisfactory research papers as evaluated by the examining committee submitted as part of the qualifying examinations |
| Trait 2: | Number of papers presented and/or published in academic outlets |
| **Objective 2:** | *Students will defend their dissertations at or about the end of the fourth year of full-time study.* |
| Trait 1: | Elapsed time to proposal defense |
| Trait 2: | Elapsed time to dissertation defense |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PhD-2 Objective 1** | *Students are able to write competitive research papers.* | | | | |
|  | **Trait** | **Poor** | **Good** | **Excellent** | **Score** |
|  | **Value** | **0** | **3** | **>3** |  |
| **Trait 1:** | Satisfactory research papers as evaluated by the examining committee submitted as part of the qualifying examinations (\*see rubric below) |  |  |  |  |
| **Total** | **Does not meet expectations: 0; Meets: 3; Exceeds: 4** |  |  |  |  |
|  | | | | | |
|  |  | **Poor** | **Good** | **Excellent** | **Score** |
|  | **Value** | **0** | **2** | **>2** |  |
| **Trait 2:** | Number of papers presented and/or published in academic outlets |  |  |  |  |
| **Total** | Does not meet expectations: 0; Meets: 2; Exceeds: 3 |  |  |  |  |

**\* Rubric for Phd-2, Objective 1, Trait 1:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Research Paper Quality Rubric** | | | | | | |
| **EVALUATION**  **CRITERIA** | **0** | **1** | **2** | **3** | **4** | **Score** |
| **Originality and novelty** | The work completely lacks originality | Repeats work of others with only minor changes | Work has not been done before, but is an obvious extension of previous work | Work incrementally improves on previous approaches | Work is cleverly designed and/or represents a significantly new direction or approach |  |
| **Advances the State of the Art** | No advance is evident | Results are obvious or easily anticipated | Incrementally advanced the knowledge in the field | Significantly advanced the knowledge in the field | Greatly advanced the knowledge in the field |  |
| **Literature survey** | Lacking | Cursory | Extensive but either not complete or not critical | Complete and concise, but not adequately critical | Comprehensive and critical |  |
| **Uses new or advanced techniques** | Uses only primitive methods | Uses only simple and long-established methods and techniques | Uses standard methods commonly known in the field | Uses the most advanced established methods | Uses or develops leading-edge methods not applied before in this field |  |
| **Has elements of theory** | Does not involve any theoretical development or predictions | Incorporates standard theory in the field | Incrementally advances theory currently used in the field | Significantly extends existing theory in the field | Involves theory that represents a break with the state-of-the-art |  |
| **Has empirical elements** | There is no data collection or usage | Few data are collected or relies on data from others | Data collection is a minor part of this work | Data collection is a major part of this work | Employs sophisticated and novel empirical methods |  |
| **Written presentation (Paper)** | Missing significant details or very difficult to read | Disorganized or lacking in some details | All details are present, but requires some effort by reader | All details are present, organization is adequate | Comprehensive, elegantly and clearly written |  |
| **Does not meet expectations: 0 – 13; Meets: 14-21; Exceeds: 22-28 Total Score:** | | | | | |  |

**APPENDIX C** contains the template for collecting data for learning goal PhD 2, Objective 1.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PhD-2 Objective 2** | *Students will defend their dissertations at or about the end of the fourth year of fulltime study.* | | | | |
|  | **Trait** | **Poor** | **Good** | **Excellent** | **Score** |
|  | **Value** | **0** | **1** | **2** |  |
| **Trait 1** | Elapsed time to proposal defense. |  |  |  |  |
| **Total** | **Does not meet expectations: >3 years; Meets: 3 years; Exceeds: less than 3 years** |  |  |  |  |
|  | | | | | |
|  | **Value** | **Poor** | **Good** | **Excellent** | **Score** |
|  |  | **0** | **1** | **2** |  |
| **Trait 2** | Elapsed time to dissertation defense. |  |  |  |  |
| **Total:** | **Does not meet expectations: Does not meet expectations: >4 years; Meets: 4 years; Exceeds: less than 3 years** |  |  |  |  |

**APPENDIX D** contains the template for collecting data for learning goal PhD 2, Objective 2.

**PhD Goal 3:** *Ph.D. graduates are able to effectively deliver academic courses in a university environment.*

The goal is to prepare students for an academic career. The process for preparing the students to teach effectively is organized in several steps to assure a seamless transition. It is manifested in the teaching policy of the Ph.D. program.

**Table 6: PhD Learning Goal 3, Objectives and Rubrics**

|  |  |
| --- | --- |
| **PhD - 3** | **Learning Goal, Objectives and Traits** |
| **GOAL [Lechler]** | *Ph.D. graduates are able to effectively deliver academic courses in a university environment.* |
| **Objective 1:** | *Students will be able to effectively deliver a course in their area of expertise.* |
| **Trait 1:** | Course Evaluation (Mean value of at least 3) |
| **Trait 2:** | Teacher Evaluation (Mean value of at least 3) |

**APPENDIX F** contains the template for collecting data for Learning goal PhD-3.

# RESULTS OF AACSB LEARNING GOAL ASSESSMENTS

Each learning goal has a number of learning objectives and performance on each objective is measured using a rubric that in turn contains a number of desired “traits”. Students are scored individually on each trait.

The grading sheets for each student are used to develop a Summary Results Sheet for each learning goal objective. A selection of these Summaries is included below.

The first table in the Summary Results Sheet for a learning objective and trait gives the counts of students falling in each of the three categories:

- Does not meet expectations  
- Meets expectations  
- Exceeds expectations

A typical table for recording results is shown on the next page.

The right-hand column in the table is used to record the average score of the students on each trait. This table provides an indication of the relative performance of students on each trait.

The second table on each sheet provides the counts of students who fall in each of the above three categories for the overall learning objective.

The person undertaking the assessment provides explanatory comments and recommendations on the bottom of the Results Summary Sheet. The recommendations suggest content or pedagogy changes for the next time the course is given.

# APPENDIX A

**School of Business**

**TEMPLATE OF AACSB Ph.D. LEARNING GOAL 1 ASSESSMENT**

**PROGRAM: PhD Program**

**PhD-1 GOAL: Ph.D. graduates can effectively communicate research in oral presentations.**

**LEARNING OBJECTIVE #1: Graduates will be able to deliver oral presentations effectively.**

**ASSESSMENT DATE: ASSESSOR:**

**NO. OF STUDENTS TESTED: COURSE:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Presentation Rubric**  *Students must be able to deliver oral presentations effectively.* | | | | |
| **PhD-1 Trait** | **Poor (0)** | **Good (5)** | **Excellent (10)** | **Score** |
| **Trait 1:  Organization & Logic** | Fails to introduce topic; no evidence of or poor logical flow of topic. | Prepares listeners for sequence and flow of topic. Loses place occasionally but flow and structure are still clear. | Engages listeners with overview, guides listeners through connections between sections, and alerts audience to key details and concepts. |  |
| **Trait 2: Voice Quality** | Cannot be heard or understood well due to volume, mumbling, speed, monotone delivery, and/or heavily accented English. | Clear delivery with well-modulated voice. Displays some confidence and enthusiasm, but may also contain flatter periods or sound overly rehearsed. | Exemplary delivery, with a voice that sounds fully engaged, conveys enthusiasm and confidence, and relates to the audience well. |  |
| **Trait 2: Body Language** | Turns away from audience or uses distracting gestures, such as pacing or tugging clothing. Speaker seems stiff, awkward or uncomfortable. Little eye contact. | Speaker is relaxed in front of the room and keeps distracting movements and gestures to a minimum. Generally faces audience and makes eye contact. | Speaker’s body language is superb and fully engages the room. Strong, consistent eye contact to the entire audience. Uses confident gestures to underscore key verbal points. |  |
| **Trait 3**  **Use of slides to enhance communication** | Misspelled, too busy, too much text, too many slides for allotted time, and/or poor use of graphics like charts. | Slides are readable, containing a reasonable amount of material per slide. Good use of graphics or illustrations. | Slides are well written/designed, engaging to the audience, and used as support to verbal content presentation. |  |
| **Trait 4**  **Ability to answer questions** | Transitions are awkward or non-existent. Speaker goes over time limits. Answers are disorganized or non-responsive. | Transitions are smooth. Speaker generally stays within time limits. Speaker responds to questions well and provides sufficient response. | Transitions are professional and very smooth. Speaker responds convincingly and addresses all aspects of question. |  |
| **Does not meet expectations: 0 – 19; Meets: 20-35; Exceeds: 36-50 Total Score:** | | | |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Total Students by Category**  **Objective 1**  (Based on Average score across all traits) | **Not meet expectations**  **Below 2** | **Meet Expectations**  **Mean: 2** | **Exceed Expectations**  **Above 2** |
|  |  |  |  |

**COMMENTS:**

**REMEDIAL ACTIONS:**

# APPENDIX B

**Ph.D. student activity report: This report is submitted every semester to the Ph.D. program director and serves as a basis for assessing goal 2.**

|  |  |
| --- | --- |
| official-logo-clear-bkg | Stevens Institute of Technology  Castle Point on Hudson  Hoboken, NJ 07030-5991 |

**Doctoral Activity Report**

|  |  |  |
| --- | --- | --- |
| Student Name: | Advisor Name: | |
| Student Identification No.: \_\_\_\_\_\_-\_\_\_\_-\_\_\_\_\_\_\_\_ | |
| Major/Concentration: | |

AREA OF DOCTORAL RESEARCH/ WORKING TITLE OF DISSERTATION:

Activity for: Fall Spring Summer 20 \_\_\_\_

Please list your learning and research activities of the current semester, include preparations for research papers and conferences, passed exams, meetings with the Dissertation Advisory Committee etc.:

|  |  |  |
| --- | --- | --- |
| Courses taken this period | | Grade |
|  | |  |
|  | |  |
|  | |  |
| Prelim/Qualifying Exams: |  |  | | |  |
| Dissertation: | Proposal | Defense | | |
| Papers: | Working Papers | | | Conference | | | Proceedings | Journal |
| Research Plan for next semester: |  | | | | | | | |
| Overall Self-Evaluation  (Satisfied with progress) |  | | | | | | | |

Other comments:

Please list your learning and research objectives for the coming semester: include preparations for research papers and conferences, exams etc.:

Please attach your updated CV

STUDENT SIGNATURE DATE

|  |  |  |
| --- | --- | --- |
| Advisor Evaluation: | Satisfactory | Unsatisfactory |

ADVISOR SIGNATURE DATE

(OVER)

INSTRUCTIONS

TO THE STUDENT:

Please list in the activity report all learning and research activities.

1. Which courses have you finished?
2. Have you passed any exams?
3. Have you started to work on your dissertation topic? What have you accomplished?
4. Have you prepared a conference paper or a journal article? To which conference or journal have you submitted?
5. What are your learning and research objectives for the coming semester? Which courses do you plan to take? Do you plan to write a research paper? Do you plan to finish your dissertation proposal?
6. Have you met with members of your dissertation advisory committee?
7. If you have the status of “doctoral candidate” you need to fill out the DAR (Doctoral Activity Report) form. Please use your progress report as the basis for the DAR.
8. Please sign your report and discuss it with your advisor.

TO THE RESEARCH ADVISOR:

Please discuss the activity report with your advisee.

1. Please specify with the student the objectives for the next semester.
2. Please co-sign the report and give a final evaluation.
3. If your advisee has the status of doctoral candidate please sign the Doctoral Activity Report form.
4. Please submit the progress report and if applicable the DAR to the School’s Ph.D. program director.
5. You will be invited to a review meeting with the Ph.D. program committee.

**APPENDIX C**

**School of Business**

**TEMPLATES OF AACSB Ph.D. LEARNING GOAL 2 ASSESSMENT**

**PROGRAM: PhD Program**

**PhD-2 GOAL: Ph.D. graduates will have sufficiently mastered the core knowledge and tools needed to conduct original research in a timely manner.**

**LEARNING OBJECTIVE #1: Students are able to write competitive, original research papers.**

**Trait # 1: Satisfactory research papers as evaluated by the examining committee submitted as part of the qualifying examinations.**

**ASSESSMENT DATE: ASSESSOR:**

**QUALIFYING EXAMINATION:**

**Candidate: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Examination Committee Members: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Research Paper Quality Rubric** | | | | | | |
| **EVALUATION**  **CRITERIA** | **0** | **1** | **2** | **3** | **4** | **Score** |
| **Originality and novelty** | The work completely lacks originality | Repeats work of others with only minor changes | Work has not been done before, but is an obvious extension of previous work | Work incrementally improves on previous approaches | Work is cleverly designed and/or represents a significantly new direction or approach |  |
| **Advances the State of the Art** | No advance is evident | Results are obvious or easily anticipated | Incrementally advanced the knowledge in the field | Significantly advanced the knowledge in the field | Greatly advanced the knowledge in the field |  |
| **Literature survey** | Lacking | Cursory | Extensive but either not complete or not critical | Complete and concise, but not adequately critical | Comprehensive and critical |  |
| **Uses new or advanced techniques** | Uses only primitive methods | Uses only simple and long-established methods and techniques | Uses standard methods commonly known in the field | Uses the most advanced established methods | Uses or develops leading-edge methods not applied before in this field |  |
| **Has elements of theory** | Does not involve any theoretical development or predictions | Incorporates standard theory in the field | Incrementally advances theory currently used in the field | Significantly extends existing theory in the field | Involves theory that represents a break with the state-of-the-art |  |
| **Has empirical elements** | There is no data collection or usage | Few data are collected or relies on data from others | Data collection is a minor part of this work | Data collection is a major part of this work | Employs sophisticated and novel empirical methods |  |
| **Written presentation (Paper)** | Missing significant details or very difficult to read | Disorganized or lacking in some details | All details are present, but requires some effort by reader | All details are present, organization is adequate | Comprehensive, elegantly and clearly written |  |
| **Does not meet expectations: 0 – 13; Meets: 14-21; Exceeds: 22-28 Total Score:** | | | | | |  |

# APPENDIX D

**School of Business**

**TEMPLATE OF AACSB PhD-2 LEARNING GOAL ASSESSMENT**

**PROGRAM: Ph.D. Program**

**PhD-2 GOAL: Ph.D. graduates master the core knowledge and tools needed to conduct original research sufficiently to identify and develop a dissertation research project in a timely manner.**

**LEARNING OBJECTIVE #1: Students are able to write competitive, original research papers.**

**NO. OF STUDENTS ASSESSED:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PhD Students** | **Count of:** | |  |  |
| **Name** | **PRJ** | **Procs**  **Bk Chap Books** | **Other** | **Average on Trait** |
|  |  |  |  |  |

**PRJ: Peer Reviewed Journal [5]**

**Procs: Conference Proceedings, Bk Chap: Book Chapters and Books [3]**

**Other: Working papers etc. [1]**

|  |  |  |  |
| --- | --- | --- | --- |
| **Total Students by Category**  **Objective 1**  (Based on Average score across all traits) | **Not meet expectations**  **0 Pubs.** | **Meet Expectations**  **1 PRJ** | **Exceed Expectations**  **2 or more PRJs** |
|  | **0** | **1** | **2** |

**COMMENTS:**

**REMEDIAL ACTIONS:**

**COMMENTS:**

**REMEDIAL ACTIONS:**

# APPENDIX E

**School of Business**

**TEMPLATE OF AACSB PhD-2 LEARNING GOAL ASSESSMENT (continued)**

**PROGRAM: Ph.D. Program**

**LEARNING OBJECTIVE #2: Students will defend their in a timely manner.**

**Trait # 1: Elapsed time to proposal defense.**

**Trait # 2: Elapsed time to dissertation defense.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Number of Students** | | |  |
| **Learning Objective 2**  **Trait # 1** | **Not Meet Expectations**  **(More 3 years)** | **Meet Expectations**  **(3 years)** | **Exceed Expectations**  **(Less 3 years)** | **Avg. Grade on Trait** |
| Elapsed time to proposal defense | **0** | **1** | **2** |  |
| **Average Grade (Maximum 4)** | | | |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Number of Students** | | |  |
| **Learning Objective 2**  **Trait # 2** | **Not Meet Expectations**  **(6 years)** | **Meet Expectations**  **(4 years)** | **Exceed Expectations**  **(Less 4 years)** | **Avg. Grade on Trait** |
| Elapsed time to dissertation defense | **0** | **1** | **2** |  |
| **Average Grade (Maximum 4)** | | | |  |

# APPENDIX F

**School of Business**

**TEMPLATE OF AACSB PhD-3 LEARNING GOAL ASSESSMENT**

**PROGRAM: Ph.D. Program**

**PhD-3 GOAL:** **Ph.D. graduates are able to effectively deliver academic courses in a university environment.**

**LEARNING OBJECTIVE #1: Students will be able to effectively deliver a course in their area of expertise.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Number of Students** | | |  |
| **Learning Objective 1 Traits** | **Not Meet Expectat-ions** | **Meet Expectat-ions** | **Exceed Expectat-ions** | **Avg. Grade on Trait** |
| Course Evaluation  (Mean value of at least 3) | **0** | **3** | **4** |  |
| **Average Grade (Maximum 4)** | | | |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Number of Students** | | |  |
| **Learning Objective 1 Traits** | **Not Meet Expectat-ions** | **Meet Expectat-ions** | **Exceed Expectat-ions** | **Avg. Grade on Trait** |
| Teacher Evaluation (Mean value of at least 3) | **0** | **3** | **4** |  |
| **Average Grade (Maximum 4)** | | | |  |

**NO. OF STUDENTS ASSESSED:**

**COMMENTS:**

**REMEDIAL ACTIONS:**