Stevens Institute of Technology

School of Business

**AACSB
ASSURANCE OF LEARNING PLAN**

**Master of Science in Financial Engineering (FE)**

June, 2024

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# 1. INTRODUCTION AND OVERVIEW OF FE Masters DEGREE

The finance world's rapid transition to a digital discipline has created incredible opportunities for experts in computer science, statistics, economics and mathematics to develop solutions to increasingly complex problems, such as how to value an asset, how to assess risk and the smartest ways to manage a portfolio. Quants are some of the most-sought professionals on Wall Street for their coding versatility and ability to model financial data to drive better decision-making.The Financial Engineering program at Stevens resides in the School of Business, giving it a practical orientation that few other programs offer. Lessons emphasize how technical tools can address specific challenges in the markets, while preparing you to identify inefficiencies, recognize opportunities and develop innovative new products. The Stevens program also recognizes the systemic nature of financial markets and prepares you for the challenges of working in large, interconnected environments.

The quantitative and systems-intensive perspective of the master's program prepares students to use financial engineering techniques to solve problems in securities valuation, risk management, portfolio structuring and regulatory concerns, with an emphasis on stochastic modeling, optimization and simulation techniques. The 30-credit degree includes six required courses that emphasize quantitative finance, financial services analytics, financial risk and regulation, and financial systems. As part of the degree, students are encouraged to take an integrated four-course certificate that allows for additional expertise in a particular discipline of their choosing.

# 2. OVERVIEW OF FE Masters ASSURANCE OF LEARNING PLAN

#

|  |  |  |
| --- | --- | --- |
|  | **Credits** | **Courses** |
| **FE Masters** | 30 | 10 |

**School of Business Vision**

To be a leading business school widely recognized for superior technology-focused and student-centric educational programs and research.

**Masters of Financial Engineering (FE) Vision**

To be recognized as a world-class program in Financial Engineering education and research.

The structure of the goals will remain the same across all programs:

* Soft Skills
	+ Goal 1 Will communicate effectively in writing and oral presentation
	+ Goal 2 Will be able to interact effectively in teams
* Critical thinking and integrative skills
	+ Goal 3 Will be able to formulate and articulate plans to align business and IT

We added several specific competencies, detail the indirect measures we use to assess the competencies and, how to track these when we discuss the goals in section 7.

**Table 1: MS in Financial Engineering Competency goals**

|  |
| --- |
| **MS in Financial Engineering** |
| FE-1: Students can communicate effectively in written and oral presentations.  |
| FE-2: Students can interact effectively in teams. |
| FE-3: Students will achieve mastery of the foundational computational methods required for derivative pricing in Financial Engineering. |
| FE-4: Students will achieve mastery in advanced derivatives |

We added several specific competencies, detailed the indirect measures to assess

the competencies and, how to track these when we outline the goals in section 7.

# 3. FE ASSURANCE OF LEARNING ASSESSMENT PLAN

Table 2: FE ASSURANCE OF LEARNING ASSESSMENT PLAN - GOALS 1 through 4

|  |  |  |  |
| --- | --- | --- | --- |
| **COMPETENCY GOAL** | **Where and when measured?** | **How measured?** | **Criterion** |
| 1. Students will communicate effectively in oral and written presentations.  | Assessed in the fall semester in FE620 Pricing and Hedgingwhere they are required to present their results in both written and oral forms. | Both the written and oral presentations are graded by the instructors of the course. Evaluated by CAL, the instructor of FE620 will coordinate.  | Obj. 1 passed at 50%, Obj. 2 passed at >40% |
| 2. Students will be able to interact effectively in teams  | Assessed in the spring in FE 630 *Portfolio Theory and Applications* where students work in groups for the final project | The final project is done in groups, so their performance in the group is tied directly to the grade received on this final. Student team evaluation | Passed at 60% |
| 3. Students will achieve mastery of the foundational computational methods required for derivative pricing in Financial Engineering. | Assessed in the spring in FE 621 *Computational Methods in Finance*.  | Assignments, exams, and quizzes over the course of the semester.  | Passed at 60% |
| 4. Students will achieve mastery in advanced derivatives  | Assessed in the fall in FE 680 *Advanced Derivatives*  | Assessed from assignments submitted in FE680 | Passed at 50% for both Objectives 1 and 2 |

# 4. FE CURRICULUM ALIGNMENT MAP

Table 3: FE Curriculum Alignment Map – Goals 1 Through 4

| **Goals/****Required FA Courses** | **1: Students can communicate effectively in oral and written presentations.**  | **2: Students can interact effectively in teams** | **3:** Students will achieve mastery of the foundational computational methods required for derivative pricing in Financial Engineering. | **4.** Students will achieve mastery in advanced derivatives |
| --- | --- | --- | --- | --- |
| FE 610 Stochastic Calculus for Finance  |  |  | Provides underlying theory for understanding many methods | Provides underlying theory for understanding many methods |
| FE 620 Pricing and Hedging  | Work done in teams in this course for a final project and final presentations evaluated | Students work in teams | Provides underlying theory for understanding many methods | Provides underlying theory for understanding many methods |
| FE 621 Computational Methods in Finance  |  |  | **Core Focus of this course** | Provides underlying techniques for implementing methods |
| FE 630 Portfolio Theory and Applications | Students write a report and do a presentation  | Students work on a project together in this course | Simulations and optimizations |  |
| FE 680 Advanced Derivatives |  |  | Students use some of these techniques in this course | **Core Focus of this course** |
| FE 800 Project in Financial Engineering | Students are expected to write a report about their work and then present their results | Students work in teams | Utilizes everything from the program | Utilizes everything from the program |
| FE 530 Into to Financial Engineering |  |  | Sets foundations | Sets foundations |
| FE 535 Intro Financial Risk Management | Students provide market briefings as a team | Students provide market briefings as a team | Performance evaluations, back-testing and simulations |  |
| FA 540 Probability Theory for FE |  |  | Sets foundations | Sets foundations |
| FE 543 Intro to Stochastic Calculus for Finance |  |  | Provides underlying theory for understanding many methods | Provides underlying theory for understanding many methods |
| FE545 Design Pattern Derivative Price | Projects as part of the course |  |  | Useful in pricing derivatives |
| FE 570 Market Microstructure Trading Strategies | Written reports | Project where they work in teams |  |  |
| FE 622 Simulation Methods in Computational Finance |  |  | Applies techniques learned in 621 | Used to price advanced derivatives |
| FE 625 Emerging Markets: Risks and Models |  |  |  |  |
| FE 635 Financial Enterprise Risk Engineering |  |  |  | Expands on derivative pricing techniques |
| FE 655 Systemic Risk and Financial Engineering |  |  |  | Improves on existing skills |
| FE 670 Algorithmic Trading Strategies | Written reports | Project where they work in teams |  |  |
| FE 900 Master’s Thesis in FE | Necessary for Thesis |  | Depends on the thesis how much this is represented, but most will contain some elements. | Depends on the thesis how much this is represented, but most will contain some elements. |

# 5. Ethics Thread Fall 2023

The FE Masters Program also takes great effort to address the importance of Business Ethics. Our students complete an ethics quiz, and in addition the following table shows the courses where ethics is explicitly addressed.

|  |  |
| --- | --- |
| **Goals/** | Students are aware of social responsibilities in a business environment and can reason about ethical issues. |
|  |  |
| **Academic/Professional Integrity** |  |
| **Responsible/Objective representation of data** |  |
| **Business and Social ethics** | Environmental Social Governance (ESG) principles of investment |

**6. Global Thread – Fall 2023**

Another thread that runs through the FE Masters Program are global considerations. Following is a chart that maps our courses to global coverage using the legend below.

**Legend**

 – Entirely Global Content

 – Significant parts are global

 – Some global content

|  |  |  |
| --- | --- | --- |
| **Course** | **Legend** | **Notes** |
| **All courses**  |  | **Based on mathematics and computer science so are fundamentally universal courses.** |
| **FE535, FE625, FE635, FE655** |  | **Risk analysis includes foreign markets, including emerging markets** |
| **FE570, FE670** |  | **Portfolios potentially consist of global assets** |
| **FE630** |  | **Investment principles for global portfolios** |
| FE800 |  | **Projects involve many different components, including global concerns** |

# 7. Masters of Financial Analytics (FE) COMPETENCY GOALS, OBJECTIVES AND RUBRICS

Goal 1: Objectives and Traits

|  |
| --- |
| Competency goal 1: Communicate effectively in writing and oral presentations. |
| Competency goal 1 has 2 Objectives, as follows:  |
| Objective 1: | *Students will be able to write effectively.* |
| Traits |   |
| Trait 1: | Logical flow |
| Trait 2: | Grammar and sentence structure |
| Trait 3: | Spelling and word choice |
| Trait 4: | Development of ideas |
|  |   |
| Objective 2: | *Students will be able to deliver presentations effectively.* |
| Traits |   |
| Trait 1: | Organization and logic |
| Trait 2: | Voice quality |
| Trait 3: | Physical presence |
| Trait 4: | Use of slides to enhance communications |
| Trait 5: | Transitions/ Time Management/ Q/A |
|  |  |

Explanation for indirect measurements:

Indirect measurements will be taken at periodic intervals. The indirect measurement currently being implemented is exit interviews, which will be discussed in greater detail in section 9.

|  |  |
| --- | --- |
| Competency goal 1Rubric |  |
| BSB – 1 | Students can communicate effectively in writing and oral presentations |  |
| Objective 1: *Students will be able to write effectively*  |  |
|   | Trait | Poor | Good | Excellent |  |
|   | Value | 0 | 5 | 10 |  |
| Trait 1: | Logical flow | Unclear introduction or conclusion. Does not use a sequence of material to lead reader through the paper. Draws illogical conclusions | Develops ideas through effective use of paragraphs, transitions, opening and concluding statements. Generally well structured to suggest connection between sub-topics. | Maintains clear focus, uses structure to build the paper's conclusions. Presents analysis using sequence of ideas, clarity of flow and continuous voice or point of view. |  |
| Trait 2: | Grammar and sentence structure | Frequently uses inappropriate grammar and incomplete or poorly structured sentences which interfere with comprehension. | Generally complies with standard English and grammar and sentence usage. | Sophisticated use of English language, using varied sentence structured, phrasing and cadence. Grammar is error-free |  |
| Trait 3: | Spelling and word choice | Frequent misspellings. Poor or limited choice of words for expression ideas. | Has proofread or checked spelling, and uses vocabulary correctly. Minor errors. | Demonstrates good use of words to support written expression of topic. Spelling is error-free. |  |
| Trait 4: | Development of ideas | Many unsupported statements offered. Uses flawed or unclear reasoning. | Most statements supported, ideas explained with examples and written with sufficient explanation. | Shows thoughtful reasoning and explores alternatives. Uses existing, supported ideas to develop well-formed, readable output. |  |
| Criterion: | Does not meet expectations: 0 – 15; Meets: 16-30 ; Exceeds: 31-40  |  |
| Objective 2 | *Students will be able to deliver presentations effectively* |  |
|   | Trait | Poor | Good | Excellent |  |
|  | Value | 0 | 5 | 10 |  |
| Trait 1: | Organization and 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 3:  | Physical Presence | 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 4: | Use of slides to enhance communications | 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 5: | TransitionsTime ManagementQ&A | 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. |  |
| Criterion: | Does not meet expectations: 0 – 19; Meets: 20-35 ; Exceeds: 36-50  |  |
|  |  |  |

COMPETENCY GOAL #2 – Goal and Objectives using the Automated Team Survey

See traits lower down

|  |
| --- |
|  Competency goal 2: Students can interact effectively in teams. |
| Objectives |  |
| Objective 1: | *Students will be able to facilitate task accomplishment within the context of project teams* |
| Objective 2: | *Students will be able to facilitate relationship building within the context of project teams.* |
|  |  |

In addition, there are specific competencies that are needed in teamwork that this goal will address. The skills that are targeted are task management skills, and relationship management skills. Task management skills include: clarifying roles and responsibilities of others; suggesting new approaches to solving problems; defining task priorities for work sessions and or projects. Relationship management skills include: working towards solutions and compromises that are acceptable to all involved; reinforcing the contributions of others; encouraging ideas and opinions even when they differ from his/her own.

Explanation for indirect measurements:

Indirect measurements will be taken at periodic intervals. The indirect measurement currently being implemented is exit interviews, which will be discussed in greater detail in section 9.

RUBRIC

Objective 1: *Students will be able to facilitate task accomplishment within the context of project teams*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | Trait | Poor | Good | Excellent |
|   | Value | 0 | 5 | 10 |
| Trait 1: | Anticipates problems and develops contingency plans | Fails to suggest a direction and does not clarify responsibilities  | Suggests some form of direction for the team | Identifies ways to proceed or alternatives to pursue and clarifies roles and objectives |
| Trait 2: | Recognizes interrelationships among problems and issues | Fails to request information from the team | Makes an effort to request information from the team | Asks questions, analyzes knowledge gaps, requests opinions, beliefs and perspectives |
| Trait 3: | Suggests new approaches to solving problems | Fails to provide information needed | Provides some necessary information | Provides data, offers factors, and judgments and highlights conclusions  |
| Trait4 | Organizes information into meaningful categories | Does not expand on others ideas | Makes an effort to build on others' suggestions | Builds on ideas expressed by others; provides examples and illustrations |
| Trait5 | Helps others to draw conclusions from the facts | Fails to suggest to the team to stay focused on the team's task | Makes an effort to keep members focused on the task | Urges team members to stay on task and to achieve team goals |
| Trait6 | Defines task priorities for work sessions and or overall projects | Fails to monitor progress | Tries to check progress | Checks on progress, helps maintain accountability of results |
| Trait7 | Ensures that goals are understood by all | Provides no analysis of team processes | Makes an effort to analyze team processes | Analyzes process and procedures used by the team in order to improve efficiency and timeliness.  |
| Trait8 | Clarifies roles and responsibilities of others | Does not ground comments in reality | Makes an attempt to check whether ideas are grounded in reality | Explores whether ideas presented are practical or workable. |
| Trait9 | Reviews progress throughout work sessions/life of a project | Does not reinforce team rules | Tries to reinforce team agreed upon principles | Helps to reinforce team rules, and maintains agreed upon principles |
| Trait10 | Summarizes the team's position on issues | Fails to summarize points and conclusions reached, and does not clarify conclusions reached | Makes an effort to summarize points and clarify conclusions | Combines ideas; sums up points made; Helps members understand the conclusions reached. |

 Objective 2: *Students will be able to facilitate relationship building within the context of project teams.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | Trait | Poor | Good | Excellent |
|   | Value | 0 | 5 | 10 |
| Trait 1: | Conveys interest in what others are saying | Fails to praise the contributions of others | Makes an effort to commend the ideas of others  | Praises the ideas of others, shows friendliness, and points out others' contributions |
| Trait 2: | Encourages ideas and opinions even when they differ from his/her own | Does not attempt to find common ground in conflicting points of view.  | Makes an effort to find common ground in disputes | Mediates differences between others and finds a common ground in disputes  |
| Trait 3: | Works towards solutions and compromises that are acceptable to all involved | Fails to motivate team members | Makes an attempt to energize team members | Motivates others towards greater effort |
| Trait4 | Shares credit for success with others | Fails to challenge disruptive behaviors  | Makes an effort to challenge uproductive behaviors | Challenges unproductive behaviors  |
| Trait5 | Cooperates with others | Fails to encourage solidarity  | Makes an effort to ensure proper team behavior | Encourages agreement and helps smooth interactions |
| Trait6 | Encourages participation among all participants | Fails to express empathy for team members  | Attempts to reflect group feelings | Expresses empathy and support for team members |
| Trait7 | Shares information with others | Reluctant to share information with team members | Occasionally disseminates information  | Regularly Shares information willingly with team members |
| Trait8 | Reinforces the contributions of others | Fails to reinforce other team members’ help  | Makes an effort to provide positive feedback following others’ assistance  | Reinforces the contributions of others |
| Trait9 | Involves others in decisions that affect them | Fails to include team members in decisions that will affect them | Makes an effort to involve other team members in decisions that will affect them | Gets team members involvement in decisions that will affect them |
| Trait10 | Encourages others to express their views even when they are contrary to his/her own | Discourages others’ constructive dissent. | Attempts to encourage others’ constructive disagreement. | Urges others’ to express contrary views. |

COMPETENCY GOAL # 3: Objectives and Traits

|  |
| --- |
| Competency goal 3: Students will achieve mastery of the foundational computational methods required for derivative pricing in Financial Engineering. |
| Objective 1: *Students will demonstrate the capability of implementing modern financial derivative pricing models.* |
| Traits |   |
| Trait 1: | The students will implement various tree approximation methods. |
| Trait 2: | The students will implement PDE discretization methods to calculate derivative prices.  |
| Trait 3: | The students will demonstrate understanding of transformation methods to solve PDS’s as well as calibrate stochastic processes to real data. |
| Trait 4: | Students will demonstrate the ability to approximate derivative prices using Monte Carlo simulations. |
| Trait 5: | The students will demonstrate the ability to write, compile, and execute computer programs to solve the problems in the course.  |

Explanation for indirect measurements:

Indirect measurements will be taken at periodic intervals. The indirect measurement currently being implemented is exit interviews, which will be discussed in greater detail in section 9.

RUBRICS

|  |
| --- |
|  FE COMPETENCY GOAL - 3: RUBRIC 1 |
| FE 3 | Students will achieve mastery of the foundational computational methods required for derivative pricing in Financial Engineering. |
| Objective 1 | *Students will demonstrate the capability of implementing modern financial derivative pricing models.*  |
|   | Trait | Poor | Good | Excellent | Score |
|   | Value | 0 | 5 | 10 |   |
| Trait 1: | The students will implement various tree approximation methods. | Poor understanding of tree approximation methods | Sufficient understanding of tree approximation methods | Excellent understanding of tree approximation methods |   |
| Trait 2: | The students will implement PDE discretization methods to calculate derivative prices.  | Poor understanding of finite difference methods | Sufficient understanding of finite difference methods | Excellent understanding of finite difference methods |   |
| Trait 3: | The students will demonstrate understanding of transformation methods to solve PDS’s as well as calibrate stochastic processes to real data. | Poor understanding of transformation methods and calibration | Sufficient understanding of transformation methods and calibration | Excellent understanding of transformation methods and calibration |   |
| Trait 4: | Students will demonstrate the ability to approximate derivative prices using Monte Carlo simulations. | Poor understanding of Monte Carlo Methods | Sufficient understanding of Monte Carlo Methods | Excellent understanding of Monte Carlo Methods |   |
| Trait 5: | The students will demonstrate the ability to write, compile, and execute computer programs to solve the problems in the course.  | Inability of writing a functional computer program  | Ability of writing a functional computer program  | The computer programs works with a variety of data and it solves all the problems accurately |  |
| Criterion: Does not meet expectations: 0-19; Meets: 20-34 ; Exceeds: 35-50 |

COMPETENCY GOAL # 4: Objectives and Traits

|  |
| --- |
| Competency goal 4: Students will achieve mastery in advanced derivatives. |
| Objective 1: *Students will construct and utilize interest rate models.* |
| Traits |   |
| Trait 1: | Students will demonstrate the ability to bootstrap the yield curve |
| Trait 2: | Students demonstrate understanding and implementation of classic interest rate models. |
| Trait 3: | Students demonstrate understanding and implementation of advanced interest rate models. |
| Objective 2: *Students will construct and utilize credit derivative models.* |
| Traits |   |
| Trait 1: | Students demonstrate the ability to model single name credit derivatives. |
| Trait 2: | Students demonstrate the ability to model multi-name credit derivatives. |

Explanation for indirect measurements:

Indirect measurements will be taken at periodic intervals. The indirect measurement currently being implemented is exit interviews, which will be discussed in greater detail in section 9.

RUBRICS

|  |
| --- |
| FE COMPETENCY GOAL - 4: RUBRIC 1 |
| FE 4 | Students will achieve mastery in advanced derivatives. |
| Objective 1 | *Students will construct and utilize interest rate models.* |
|   | Trait | Poor | Good | Excellent | Score |
|   | Value | 0 | 5 | 10 |   |
| Trait 1: | Students will demonstrate the ability to bootstrap the yield curve | Students show no understanding of the yield curve | Student shows average understanding of implementing the bootstrap method for yield curves. | Student is highly competent in implementing the bootstrap method for yield curves. |   |
| Trait 2: | Students demonstrate understanding and implementation of classic interest rate models. | Students show no understanding of classic interest rate models | Student shows average understanding of implementing classic interest rate models | Student is highly competent in implementing classic interest rate models |   |
| Trait 3: | Students demonstrate understanding and implementation of advanced interest rate models. | Students show no understanding of advanced interest rate models | Student shows average understanding of advanced interest rate models | Student is highly competent in implementing advanced interest rate models |   |
| Criterion: Does not meet expectations: 0 – 14; Meets: 15-20; Exceeds: 20-30 |
| QF COMPETENCY GOAL - 4: RUBRIC 2 |
| FE 4 | Students will achieve mastery in advanced derivatives. |
| Objective 2 | *Students will construct and utilize credit derivative models.* |
|   | Trait | Poor | Good | Excellent | Score |
|   | Value | 0 | 5 | 10 |   |
| Trait 1: | Students demonstrate the ability to model single name credit derivatives. | Students show no understanding of single name credit derivatives | Student shows average understanding of single name credit derivatives | Student is highly competent in implementing single name credit derivatives |   |
| Trait 2: | Students demonstrate the ability to model multi-name credit derivatives. | Students show no understanding of multi-name credit derivatives | Student shows average understanding of multi-name credit derivatives | Student is highly competent in implementing multi-name credit derivatives |   |
| Criterion: Does not meet expectations: 0 – 9; Meets: 10-14; Exceeds:15-20 |

# 8. RESULTS OF AACSB COMPETENCY GOAL ASSESSMENTS

The results of the initial competency goal assessments carried out to date are included below.

**Explanation**

Each competency 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 competency 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

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 doing 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.

**Additionally, as described above,** indirect measurements will be taken at periodic intervals for all goals. The primary tool for this indirect measurement will be exit interviews, summarized in a separate document.

**School of Business**

**RESULTS OF AACSB COMPETENCY GOAL Direct ASSESSMENT**

**Here the results for Fall 2022 will appear by competency goal for example:**

**COMPETENCY GOAL #1:***Our students will communicate effectively in written and oral communications.*

**LEARNING OBJECTIVE #1:***Students will be able to write effectively.*

**ASSESSMENT DATE:**

**ASSESSOR:**

**NUMBER OF STUDENTS & COURSE:**

|  |  |  |
| --- | --- | --- |
|  | **Number of Students** |  |
| **Competency goal Traits** | **Not Meet Expectations** | **Meets Expectations** | **Exceeds Expectations** | **Average Grade** |
| 1: Logical flow |  |  |  |  |
| 2: Grammar & Sentence Structure |  |  |  |  |
| 3: Spelling & word choice |  |  |  |  |
| 4: Development of ideas |  |  |  |  |
| **Average Grade (Out of 10) =** |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Not Meet Expectations** | **Meets Expectations** | **Exceeds Expectations** |
| **Total Students by Category***(Based on average score across all traits)* |  |  |  |

**COMMENTS:**

**REMEDIAL ACTIONS:**

**LEARNING OBJECTIVE #2:***Students will be able to deliver presentations effectively.*

**ASSESSMENT DATE:**

**ASSESSOR:**

**NUMBER OF STUDENTS & COURSE:**

|  |  |  |
| --- | --- | --- |
|  | **Number of Students** |  |
| **Competency goal Traits** | **Not Meet Expectations** | **Meets Expectations** | **Exceeds Expectations** | **Average Grade** |
| 1: Organization & Logic |  |  |  |  |
| 2: Voice Quality |  |  |  |  |
| 3: Physical Presence |  |  |  |  |
| 4: Use of Slides to Enhance Comm |  |  |  |  |
| 5: Transitions, Time Mgt, Q&A |  |  |  |  |
| **Average Grade (Out of 10) =** |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Not Meet Expectations** | **Meets Expectations** | **Exceeds Expectations** |
| **Total Students by Category***(Based on average score across all traits)* |  |  |  |

**COMMENTS:**

**REMEDIAL ACTIONS:**

**LEARNING OBJECTIVE # 1:** *Students will be able to facilitate task accomplishment (team leadership) within the context of project teams*

**ASSESSMENT DATE: ASSESSOR:**

**NO. OF STUDENTS TESTED**

|  |  |  |
| --- | --- | --- |
|  | **Number of Students** |  |
| **Competency goal Traits** | Failed to Meet Expectations | Met Expectations | Exceeded Expectations | Average Score |
| 1. Anticipates problems and develops contingency plans |  |  |  |  |
| 2. Recognizes interrelationships among problems and issues |  |  |  |  |
| 3. Suggests new approaches to solving problems |  |  |  |  |
| 4. Organizes information into meaningful categories |  |  |  |  |
| 5. Helps others to draw conclusions from the facts |  |  |  |  |
| 6. Defines task priorities for work sessions and or overall projects |  |  |  |  |
| 7. Ensures that goals are understood by all |  |  |  |  |
| 8. Clarifies roles and responsibilities of others |  |  |  |  |
| 9. Reviews progress throughout work sessions/life of a project |  |  |  |  |
| 10. Summarizes the team’s position on issues |  |  |  |  |
| **Average Grade (Maximum 5)** |  |
|  | **Not Meet Expectations**  | **Meet Expectations**  | **Exceed Expectations**  |
| **Total Students by Category** (Based on Average score across all traits) |  |  |  |

**COMMENTS:**

**REMEDIAL ACTIONS:**

**LEARNING OBJECTIVE # 2:** *Students will be able to facilitate relationship building (team facilitation) within the context of project teams.*

**ASSESSMENT DATE: ASSESSOR:**

**NO. OF STUDENTS TESTED: 16 Course: FE630 Combined (On Campus and Web section W0)**

|  |  |  |
| --- | --- | --- |
|  | **Number of Students** |  |
| **Competency goal Traits** | Failed to Meet Expectations | Met Expectations | Exceeded Expectations |  |
| 1. Conveys interest in what others are saying |  |  |  |  |
| 2. Encourages ideas and opinions even when they differ from his/her own |  |  |  |  |
| 3. Works towards solutions and compromises that are acceptable to all involved |  |  |  |  |
| 4. Shares credit for success with others |  |  |  |  |
| 5. Cooperates with others |  |  |  |  |
| 6. Encourages participation among all participants |  |  |  |  |
| 7. Shares information with others |  |  |  |  |
| 8. Reinforces the contributions of others |  |  |  |  |
| 9. Involves others in decisions that affect them |  |  |  |  |
| 10. Encourages others to express their views even when they are contrary to his/her own |  |  |  |  |
| **Average Grade (Maximum 5)** |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Failed to Meet Expectations | **Meet Expectations**  | **Exceed Expectations**  |
| **Total Students by Category**(Based on Average score across all traits) |  |  |  |

**COMMENTS:**

**REMEDIAL ACTIONS:**

**COMPETENCY GOAL # 3:** Students will achieve mastery of the foundational computational methods required for quantitative analysis in Financial Engineering.

**LEARNING OBJECTIVE #1:**
*Students will demonstrate the capability of implementing and analyzing various numerical techniques and applying them to modern problems in financial engineering.*

**ASSESSMENT DATE: ASSESSOR:**

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

|  |  |  |
| --- | --- | --- |
|  | **Number of Students** |  |
| **Competency goal Traits** | **Not Meet Expectat-ions** | **Meet Expectat-ions** | **Exceed Expectat-ions** | **Avg. Grade on Trait** |
| Students will implement and analyze tree approximations for continuous-time stochastic processes. |  |  |  |  |
| Students will implement and analyze Monte Carlo simulation schemes for stochastic processes.  |  |  |  |  |
| Students will implement and analyze techniques for calibrating stochastic processes to financial data.  |  |  |  |  |
| Students will apply numerical techniques to derivatives pricing, asset allocation, risk management, and other problems in financial engineering.  |  |  |  |  |
| Students will demonstrate the ability to (i) write, compile, and run computer programs for the numerical techniques covered in the course, and (ii) present and describe numerical results using both visual analytics and plain language. |  |  |  |  |
| **Average Grade (Maximum 10)** |  |

**Criterion: Does not meet expectations: 0-6; Meets: 7-8; Exceeds: 9-10**

|  |  |  |  |
| --- | --- | --- | --- |
|   | **Not meet Expectations** | **Meets Expectations** | **Exceeds Expectations** |
| **Total Students by Category***(Based on Average score across all traits)* |  |  |  |
| **Students meeting or exceeding expectations:** |  |

**COMMENTS:**

**REMEDIAL ACTIONS:**

**COMPETENCY GOAL #4:** Students will achieve mastery in advanced derivatives.

**LEARNING OBJECTIVE # 1:** *Students will construct and utilize interest rate models.*

**ASSESSMENT DATE: ASSESSOR:**

**NO. of Students Evaluated: COURSE:**

|  |  |  |
| --- | --- | --- |
|  | **Number of Teams** |  |
| **Competency goal Traits** | **Not Meet Expectations** | **Meet Expectations** | **Exceed Expectations** | **Avg. Grade on Trait** |
| Students will demonstrate the ability to bootstrap the yield curve |  |  |  |  |
| Students demonstrate understanding and implementation of classic interest rate models. |  |  |  |  |
| Students demonstrate understanding and implementation of advanced interest rate models. |  |  |  |  |
| **Average Grade (Maximum 10)** |  |

**Does not meet expectations: 0 – 7.49; Meets: 7.5-9.49; Exceeds: 9.50-10.00**

|  |  |  |  |
| --- | --- | --- | --- |
|   | **Not meet Expectations** | **Meets Expectations** | **Exceeds Expectations** |
| **Total Students by Category***(Based on Average score across all traits)* |  |  |  |
| **Students meeting or exceeding expectations:** |  |

**COMMENTS:**

**REMEDIAL ACTIONS:**

**LEARNING OBJECTIVE # 2:** *Students will construct and utilize credit derivative models.*

**ASSESSMENT DATE: ASSESSOR:**

**NO. of Students Evaluated:**

|  |  |  |
| --- | --- | --- |
|  | **Number of Teams** |  |
| **Competency goal Traits** | **Not Meet Expectations** | **Meet Expectations** | **Exceed Expectations** | **Avg. Grade on Trait** |
| Students demonstrate the ability to model single name credit derivatives. |  |  |  |  |
| Students demonstrate the ability to model multi-name credit derivatives. |  |  |  |  |
| **Average Grade (Maximum 100)** |  |

**Does not meet expectations: 0 – 7.49; Meets: 7.5-9.49; Exceeds: 9.50-10.00**

|  |  |  |  |
| --- | --- | --- | --- |
|   | **Not meet Expectations** | **Meets Expectations** | **Exceeds Expectations** |
| **Total Students by Category***(Based on Average score across all traits)* |  |  |  |
| **Students meeting or exceeding expectations:** |  |

**COMMENTS:**

**REMEDIAL ACTIONS:**

# 9. Indirect Measurements

*Indirect Measurements:*

* Currently we are using exit interviews, collected from the FE students who have graduated in the last year.

*How we use them in our programs:*

* Assessing the students’ experiences at Stevens
* Allow for a rating of satisfaction with the various aspects of the program
* Determine any deficiencies in the coursework, from their viewpoint
* Determine average compensation of our graduates

# 10. Competencies

1. COPA’s tools like 12Twenty, which record placement outcomes for our students
2. We publicize the employment rate and starting salary of our students
3. We highlight exemplary students with awards for academic achievement and for commitment to leadership and service
4. Success in the CFA and FRM exams that our students take, which is a result of studying in our programs. The best students are selected for scholarships in these exams

# 11. Engagement, Innovation, and Impact

* Engagement
	+ We engage graduate students with graduate assistantships, where they organize events, contact incoming students, and work on other tasks
	+ We engage current students in clubs, such as the Stevens Graduate Finance Association, and Stevens Women in Business
	+ Capstone projects, such as the FE 800 industry projects and the Integrated Capstone Experience
	+ Faculty meetings: we engage faculty in curriculum development, revamping, and enhancements
	+ Finance Board Members: we engage them in curriculum development by regularly seeking their input to curriculum initiatives we are undertaking
* Innovation
	+ Lab courses: they provide skills to incoming students and ensure the graduates are better positioned to compete for jobs; they are offered across all three financial programs
	+ Having Ph.D. students help develop practical problems that test the skills learned in classes
* Impact
	+ Outcomes: We enhance student skills to get better jobs and positively contribute to economy and society
	+ Business School Rankings: improvement through the year because of our efforts
	+ Our Sustainability Offering: this ensures that students are informed about ways to better society
	+ By being responsible for capstone projects/masters thesis, our students will gain skills in doing independent research. In addition, they will learn how best to effectively convey their ideas to an audience.
	+ Through teamwork, they learn collaborative practices.
	+ The analytical skills our students learn will allow them to excel in their given fields, as we have prepared them to be able to handle all sorts of situations. Their math and computer science skills translate to working in the quantitative finance domain.