I. Writing Plan Cover Page

*Please fill in the gray areas on this form.*

March 19, 2018


Industrial and Systems Engineering

<table>
<thead>
<tr>
<th>WEC Unit Name</th>
<th>College of Science and Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial and Systems Engineering</td>
<td>College</td>
</tr>
<tr>
<td>Department</td>
<td>Associate Teaching Professor</td>
</tr>
<tr>
<td>Lisa A. Miller</td>
<td>Title</td>
</tr>
<tr>
<td>WEC Faculty Liaison (print name)</td>
<td>612-625-7397</td>
</tr>
<tr>
<td><a href="mailto:lisamill@umn.edu">lisamill@umn.edu</a></td>
<td>Phone</td>
</tr>
</tbody>
</table>

Writing Plan ratified by Faculty

*Note: This section needs to be completed regardless of Writing Plan edition.*

Date: 2/2/18 | If Vote: 11 / 11

Process by which Writing Plan was ratified within unit (vote, consensus, other- please explain):

Vote in faculty meeting. 11 of 13 faculty members were present.
II. **Unit Profile:** Industrial and Systems Engineering

*Please fill in the gray areas on this form.*

**Number of Tenured and Tenure-Track Faculty:**

<table>
<thead>
<tr>
<th>Faculty Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professors</td>
<td>3</td>
</tr>
<tr>
<td>Associate Professors</td>
<td>2</td>
</tr>
<tr>
<td>Assistant Professors</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>13</td>
</tr>
</tbody>
</table>

**Comments about Faculty/Instructors**

**Major(s)**

*Please list each major your Unit offers:*

<table>
<thead>
<tr>
<th>Major</th>
<th>Total # students enrolled in major as of 2018</th>
<th>Total # students graduating with major AY 17-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. ISyE</td>
<td>184</td>
<td>69</td>
</tr>
</tbody>
</table>

**WEC Implementation Process**

<table>
<thead>
<tr>
<th>Process</th>
<th>Semester/Year</th>
<th># participated</th>
<th># invited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review and approval of plan</td>
<td>2/2/18</td>
<td>11</td>
<td>13</td>
</tr>
</tbody>
</table>
III. Signature Page

Signatures needed regardless of Writing Plan edition. Please fill in the gray areas on this form.

If this page is submitted as a hard copy, and electronic signatures were obtained, please include a print out of the electronic signature chain here.

WEC Faculty Liaison

Lisa Miller

WEC Faculty Liaison (print name)

Signature

Associate Teaching Professor

Title

3/17/18

Date

Department Head/Chair

Prof. Shuzhong Zhang

Print Name

Signature

Department Head and Professor

Title

3/22/18

Date

Associate Dean

Paul Strykowski

Print Name

Signature

Associate Dean and Professor

Title

3/23/18

Date
IV. Writing Plan Narrative, 3rd Edition

Please retain section headers and prompts in your plan.

Introductory Summary:
Briefly describe the reason(s) this unit (department, school, college) become involved in the WEC project, the key findings that resulted from the process of developing this plan, and the implementation activities that are proposed in this Writing Plan, with particular attention to the following questions: what is new in this 3rd edition of the Writing Plan? What, if any, key changes have been made to the 2nd edition? What key implementation activities are proposed in this edition of the Writing Plan? (1 page maximum)

The Industrial & Systems Engineering undergraduate program launched in 2013 with the offering of our first major-required undergraduate courses. This opportunity to hard-wire writing into the curriculum from the beginning, rather than integrating it into pre-existing courses, has made it possible for us to develop an integrated and effective curriculum and has contributed to the rapid growth of our major and our success in placing graduates in employment and further education.

In practice, Industrial & Systems Engineers frequently collaborate with people from a variety of disciplines, including technical fields like engineering and business fields, such as finance and marketing. Consequently, the ability to proficiently communicate to the audience, whether technical or non-technical audience, is a particularly critical skill for an Industrial Engineer.

We have now graduated our first three classes of seniors and were able to establish baseline data on student writing success and opportunities for growth and development. The results of rating, our internal assessment measures, and the comments of ABET accreditors all illustrate that we have been successful in communicating consistent expectations for student writing, empowering Teaching Assistants to provide effective commentary and coaching on writing, and using connections with colleagues in industry to develop a culture of writing.

At the same time, the rapid expansion of our major and the growth of our faculty mean that the contexts of our initial discussions have changed. Fewer than half of current ISYE faculty were participants in the creation of our initial criteria, and the new specializations and research interests of our faculty have contributed to the development of a deeper and more varied curriculum. It has also provided us the opportunity to reconceive our goals for increased faculty engagement. Details of these changes follow.
Section 1: DISCIPLINE-SPECIFIC WRITING CHARACTERISTICS

What characterizes academic and professional communication in this discipline?

☐ There have not been substantial revisions to this section of the Writing Plan.
☐ There have been substantial revisions to this section of the Writing Plan. (Discuss these explicitly.)

Writing in Industrial and Systems Engineering is:

**Descriptive**— inputs; conveying processes and data

**Analytical**— emphasizing the logical examination of subject(s), decisions, constraints, and objects/objectives

**Explanatory**— conveys complex technical concepts and methods and/or large amounts of data into generally comprehensible definitions and/or instructions.

**Data-driven**—
- Data feeds models
- Fact, not opinion, based arguments
- Use mathematical principles
- Logical steps
- We use high-dimensional data sets and find what is interesting about them, as well as talk about large data sets

**Concise**— excludes repetitive or extraneous information that could confuse or distract a reader.

**Collaboratively authored**— work is often conducted with a team that may or may not be co-located.

**Visual**— problems, approaches, and conclusions are presented in ways suitable for oral presentations. Diagrams, graphs, networks, charts of data, etc. are used in written or oral presentations.

Written and formatted in ways that are appropriate to the intended audience, either technical or non-technical

What types of writing are common in the professional and academic fields related to Industrial and Systems Engineering?

- Correspondence (email)
- Presentations
- Proposals
- Reports
- Graphics and visualizations of data and processes
- Articles
- Records
- Research plans
Section 2: DESIRED WRITING ABILITIES

With which writing abilities should students in this unit’s major(s) graduate?

☒ There have not been substantial revisions to this section of the Writing Plan.
☐ There have been substantial revisions to this section of the Writing Plan. (Discuss these explicitly.)

1. Describe mathematical models in words, such that all necessary elements of the problem are included and that a reasonably knowledgeable person can create/replicate the model.

2. Write mathematical models in standard forms.

3. Describe the steps of an algorithm and/or utilization of a formula in a clear, concise manner, such that the algorithm or formula can be followed and applied by someone in the field.

4. Explain and justify insights and conclusions of complex analyses to non-technical audiences, such that audiences have the information they need and would be willing to take the recommended actions.

5. Synthesize and summarize key points.

6. Create clear, impactful oral presentations with visual aids (e.g. PowerPoint).

7. Write project documentation intended for a technical audience containing
   a) Mathematical model descriptions
   b) Algorithm description
   c) Mathematical solution
   d) Other necessary technical details

   such that audience is convinced of technical validity and repeatability.

8. Write project documentation intended for a non-technical audience containing
   a) Description of problem
   b) Description of modeling and solution approaches for non-technical audience
   c) Summary of conclusions, insights, and recommended actions.

9. Represent themselves professionally, both in written and oral forms.

10. Appropriately integrate visual aids (graphs, networks, charts, tables, flow charts).

11. Communicate among a project team using web-based collaboration tools.
12. Create cohesive team-written documents, such that team-authored documents read in one voice.

Section 3: INTEGRATION OF WRITING INTO UNIT’S UNDERGRADUATE CURRICULUM
How is writing instruction currently positioned in this unit’s undergraduate curriculum (or curricula)? What, if any, course sequencing issues impede an intentional integration of relevant, developmentally appropriate writing instruction?

☐ There have not been substantial revisions to this section of the Writing Plan.
☒ There have been substantial revisions to this section of the Writing Plan. (Discuss these explicitly.)

For Plans One and Two, the description of writing activities was grounded in predictions about our course offerings and sequences. Because the majority of ISyE undergraduate courses had never been offered, we proactively integrated writing into our curriculum from the outset, rather than revising an existing curriculum. Faculty completed grids based on knowledge of similar undergraduate and graduate courses, as well as logical thinking about which writing abilities best matched the other learning objectives of each course.

“Novice,” “Intermediate,” and “Advanced” were defined as follows:

- **Novice**: students [upon beginning the course] have never done [this type of writing] before;
- **Intermediate**: students [upon beginning the course] have done this type of writing in one or two courses; and
- **Advanced**: upon entering the course, students should have experienced exposure to this ability in several courses. The instructional support will focus on enabling refinement of this ability.

In Spring 2015, faculty updated the grids based on their experiences teaching the courses. Some abilities were added or deleted, while others remained unchanged or at a revised level. The course IE 3522-Quality Engineering and Reliability, was also added to the grid.
# Industrial and Systems Engineering Writing-Enriched Curriculum Matrix

## ISyE Courses

<table>
<thead>
<tr>
<th>Fall (Soph.)</th>
<th>Spr (Soph.)</th>
<th>Fall (Jr.)</th>
<th>Spr (Jr.)</th>
<th>Fall (Sr.)</th>
<th>Spr (Sr.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE 3101 - Engineering Economics</td>
<td>IE 2551 - Statistics</td>
<td>IE 3011 - Optimization I</td>
<td>IE 3552 - Quality Engineering and Reliability</td>
<td>IE 3553 - Simulation</td>
<td>IE 4551 - Project Management</td>
</tr>
<tr>
<td>IE 3021 - Engineering Economics</td>
<td>IE 3021 - Quality Engineering and Reliability</td>
<td>IE 3021 - Stochastic Models</td>
<td>IE 4551 - Production &amp; Inventory</td>
<td>IE 4012 - Optimization II</td>
<td>IE 4041 - Senior Design</td>
</tr>
</tbody>
</table>

## Writing Abilities

<table>
<thead>
<tr>
<th>1. Describe mathematical model in words</th>
<th>2. Write mathematical model in standard forms</th>
<th>3. Describe the steps of an algorithm in a clear, concise manner</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Explain and justify insights and conclusions of complex analyses to non-technical audiences</td>
<td>5. Synthesize and summarize key points</td>
<td>6. Create clear, impactful oral presentations with visual aids (e.g., PowerPoint)</td>
</tr>
<tr>
<td>7. Write project documentation intended for a technical audience</td>
<td>8. Write project documentation intended for a non-technical audience</td>
<td>9. Represent self professionally, both in written and oral forms</td>
</tr>
<tr>
<td>a. Mathematical model descriptions</td>
<td>a. Description of problem</td>
<td>10. Appropriately integrate visual aids (graphs, networks, charts, tables, flow charts) into project documentation</td>
</tr>
<tr>
<td>b. Algorithm description</td>
<td>b. Description of modeling and solution approaches for non-technical audience</td>
<td>11. Communicate among a project team using web-based collaborative tools</td>
</tr>
<tr>
<td>d. Other necessary technical details</td>
<td>d.</td>
<td>13. Write according to faculty-approved style guidelines</td>
</tr>
</tbody>
</table>

### Levels
- **Novice**
- **Intermediate**
- **Advanced**
The following updated table contains examples of writing assignments expected for each class, as emerged in the production of our ISyE Undergraduate Writing guide. Note that most courses also include a course project:

<table>
<thead>
<tr>
<th>ISyE Course</th>
<th>Examples of assignments with writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE 1101 - Foundations of Industrial and Systems Engineering</td>
<td>Classical linear programs, classical dynamic programs, standardforms, EOQ model, Final exam, group project</td>
</tr>
<tr>
<td>IE 2021 - Engineering Economics</td>
<td>diagrams, problem sets including explanations, exams,</td>
</tr>
<tr>
<td>IE 3521 - Statistics, Quality and Reliability</td>
<td>problem sets, writing assignments</td>
</tr>
<tr>
<td>IE 3011 - Optimization I</td>
<td>problem sets, homework, tests</td>
</tr>
<tr>
<td>IE 3522 - Quality Engineering and Reliability</td>
<td>homework, emphasis on charting, group project with multiple deliverables, and presentation</td>
</tr>
<tr>
<td>IE 3553 - Simulation</td>
<td>homework, final project and presentation</td>
</tr>
<tr>
<td>IE 4011 - Stochastic Models</td>
<td>problem sets, project</td>
</tr>
<tr>
<td>IE 4551 - Production &amp; Inventory Control</td>
<td>final project report, presentations, book review, interview</td>
</tr>
<tr>
<td>IE 3012 - Optimization II</td>
<td>course project, homework</td>
</tr>
<tr>
<td>IE 4541 - Project Management</td>
<td>Statement of Work, Master Project Plan, Status Update, Final Report, examples in class, presentations, project documentation, professional</td>
</tr>
<tr>
<td>IE 4041 - Senior Design</td>
<td>project report and presentation in class and to community partner, professional communication with partners</td>
</tr>
</tbody>
</table>

For Plan 3, we intend to both continue our survey of writing practices and review and potentially revise and specify our criteria. As the major is now established and we have had students complete our course sequences, we believe we will be well served by resurveying faculty and students to determine when and where students encounter the specific writing abilities detailed in the plan.
Section 4: ASSESSMENT OF STUDENT WRITING
What concerns, if any, have unit faculty and undergraduate students voiced about grading practices?

Please include a menu of criteria extrapolated from the list of Desired Writing Abilities provided in Section II of this plan. (This menu can be offered to faculty/instructors for selective adaptation and will function as a starting point in the WEC Project’s longitudinal rating process.).

☐ There have not been substantial revisions to this section of the Writing Plan.
☒ There have been substantial revisions to this section of the Writing Plan. (Discuss these explicitly.)

Faculty identified initially identified concerns about grading:

1. Grading writing as well as grading for the correct numerical answer to a problem. This is seen as a challenge for both TA’s and faculty, due to the perception of additional time required and the inexperience of applying this grading approach. For example, several faculty members voiced an opinion that well-written assignments should receive extra credit, but that assignments containing the correct numerical answer should not be penalized for poor writing.
2. Oversight of TA’s when they are grading writing.
3. Reaction of students to receiving only partial credit for numerically and technically correct answers.
4. Discerning for which assignments the writing-focused grading criteria should be utilized, versus assignments where the primary objective is for students to wrestle with complex technical material, where it is unreasonable to also expect them to focus on writing.

Many of these initial concerns have been allayed by our TA training activities, and TAs report that they value the professional development activities provided by the WEC program. Our largest challenge on grading is incorporating new faculty to the program and managing changes in class size and delivery method that accompanied our rapid growth.
Table 3: Menu of ISyE Grading Criteria

<table>
<thead>
<tr>
<th>Section #2: What writing abilities should ISyE majors be able to demonstrate by the time they graduate?</th>
<th>Section #4: Include a menu of grading criteria extrapolated from the list of Desired Writing Abilities.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability</td>
<td>Translated into grading criteria:</td>
</tr>
<tr>
<td>Students should be able to...</td>
<td>The text...</td>
</tr>
<tr>
<td>1. Describe mathematical models in words</td>
<td>describes mathematical models in words, such that all necessary elements of the problem are included and that a reasonably knowledgeable person can create/replicate the model. This includes defining notation and identifying variables used in the model.</td>
</tr>
<tr>
<td>2. Write mathematical models in standard forms</td>
<td>uses standard forms for written mathematical models</td>
</tr>
<tr>
<td>3. Describe the steps of an algorithm and/or utilization of a formula in a clear, concise manner</td>
<td>3a. describes the steps of an algorithm in a clear, concise, and complete manner, such that the algorithm can be followed by someone in the field; and/or</td>
</tr>
<tr>
<td></td>
<td>3b. describes the components of a formula in a clear, concise, and complete manner, such that the formula can be applied by someone in the field</td>
</tr>
<tr>
<td>4. Explain and justify insights and conclusions of complex analyses to non-technical audiences</td>
<td>4a. explains insights and conclusions of complex analyses to non-technical audience, such that audiences have the information they need to take action</td>
</tr>
<tr>
<td></td>
<td>4b. justifies insights and conclusions of complex analyses to non-technical audiences, such that audiences would be willing to take recommended actions</td>
</tr>
</tbody>
</table>
| 5. Synthesize and summarize key points | 5a. **synthesizes** information from different sources to create a new understanding (such as a conclusion)  
5b. **identifies** key points in a concise summary |
| 6. Create clear, impactful oral presentations with visual aids (e.g. PowerPoint) | the presentation is...  
• organized clearly  
• practiced  
• delivered with confidence  
• used appropriate language (formality)  
• included appropriate details, given audience’s level of knowledge  
visual aids...  
6a. support the oral presentation  
6b. labeled clearly  
6c. presented in large enough format to be readable from the back of the room  
6d. can stand alone, such that an audience member could understand the visual aid without the oral presentation |
| 7. Write project documentation intended for a technical audience | 7. assembles necessary ingredients of project documentation intended for a technical audience such that audience is convinced of technical validity and repeatability  
**a)** Mathematical model descriptions  
**b)** Algorithm description  
**c)** Mathematical solution  
**d)** Other necessary technical details |
<table>
<thead>
<tr>
<th>8. Write project documentation intended for a non-technical audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Description of problem</td>
</tr>
<tr>
<td>b) Description of modeling and solution approaches for non-technical audience</td>
</tr>
<tr>
<td>c) Summary of conclusions, insights, and recommended actions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8: write project report intended for a non-technical audience such that the text:</th>
</tr>
</thead>
<tbody>
<tr>
<td>8a: describes clearly the problem to be solved in a project report for a non-technical audience</td>
</tr>
<tr>
<td>8b: describes clearly the modeling and solution approaches for a non-technical audience in a project report</td>
</tr>
<tr>
<td>8c: summarizes conclusions for a non-technical audience in a project report</td>
</tr>
<tr>
<td>8d: summarizes insights and recommended actions for a non-technical audience in a project report</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9. Represent themselves professionally, both in written and oral forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>9a: uses a tone that is unlikely to distract the target audience</td>
</tr>
<tr>
<td>9b: see #6</td>
</tr>
</tbody>
</table>
| 10. Appropriately integrate visual aids (graphs, networks, charts, tables, flow charts) | 10. integrates visual aids such that:
10a: the visual aid is appropriate to the information or concept being communicated (e.g., correct type of chart)
10b: all data, units, and symbols are labeled
10c: visual aids are readable in the intended format
  · For presentations, text and graphics are large enough to be seen
  · For printed reports, data is distinguishable in the prescribed printing format (Color or B&W)
10d: visual aid is at appropriate place in the document or presentation and correctly labeled |
| 11. Communicate among a project team using web-based collaboration tools | 11: criterion not necessary for this ability....#11 refers more to the overall collaboration process, and could include things like meeting minutes, brainstorming documents, team communication plans, etc. |
| 12. Create team-written documents | 12. is cohesive, such that team-authored documents read in one voice |
Section 5: SUMMARY OF IMPLEMENTATION PLANS, including REQUESTED SUPPORT, RELATION TO PREVIOUS IMPLEMENTATION ACTIVITIES, and SUSTAINABILITY PLANS

What does the unit plan to implement during the period covered by this plan? What forms of instructional support does this unit request to help implement proposed changes? What are the expected outcomes of named support?

How do the implementation plans of the 3rd edition Writing Plan relate to implementation activities from the 1st and 2nd edition Writing Plans? What has been successful? What was not successful? How do implementation plans build on what was learned from the first year of implementation? How do implementation plans anticipate the ongoing application of this final edition Writing Plan?

How will the unit move toward ownership of the implementation process after the end of eligibility for WEC funding? When needed, what will be sources of funding and resource support? How will ongoing evaluation and improvement of the Writing Plan take place?

Updates on Priorities from Editions 1 and 2:

Priority (1): Consistent communication and usage of grading criteria in required courses. Faculty have adopted the grading criteria proposed in the first Writing Plan across courses in the curriculum. In particular, the writing expectations and grading criteria were especially emphasized in the introductory sophomore-level courses, and students are hearing the same messages in their junior courses. TA workshops have helped to clarify our expectations, and as new faculty transition into teaching established courses, we have worked consistently to keep attention to writing clear and consistent.

Priority (2): Development of a writing guide that will be distributed to students in introductory courses and referred to throughout their ISyE studies. Faculty have written course-specific writing guides and grading expectations for several undergraduate courses. These guides established the foundation for a program-wide writing guide. Synthesis of individual course writing guides, as well as the infusion of other materials and discipline best practices, into the ISyE Writing Guide were the primary responsibility of our WEC RA.

The initial draft of the ISyE guidelines went to the faculty for comment in Spring 2017. We hope to continue to modify and develop these materials, add additional examples from courses, and seek opportunities for faculty to incorporate the guide into assignment design.

Priority (3): Training of TA’s and interested faculty for grading writing. TA training events have been held for three years, including both graduate TAs and undergraduate TAs. Participants reported both high satisfaction with the activity and increased confidence in their abilities to comment upon and teach writing in the discipline. As new faculty and an expanding program have moves us away from the initial core, we feel well positioned for a recommitment to faculty involvement in these activities.

Priority (4): Engage and support ISyE faculty as they begin, or continue, implementing Writing Plan elements in their courses. Priority 4 is the emphasis for our next round of implementation.
Priority (5): Reinforce importance and relevance of writing to ISyE students. In plan two, we proposed the development of an Industry Panel on writing in ISyE, as well as the establishment of awards for written and oral presentation of Senior Design projects.

As courses have become established and as we have built upon out networks of industry partners, we have seen a number of course activities that have connected to industry partners. Similarly, your recent alumni have been generous in communicating the importance of writing in their interactions with students at ISyE events. We determined that a standalone panel in 2017 was not practical or preferable, so we did not host this event. Similarly, we have not yet implemented a writing award.

Implementation activities for Plan 3

1. Engage all faculty, particularly new faculty, in determining our writing abilities and criteria.

We will invite WEC staff to work with current faculty to review the writing abilities and criteria established in our initial plan and to further clarify graduate level expectations for student writing. As the structured conversation of our initial WEC implementation helped to create buy in and commitment to the criteria, we hope that a systematic review and resurvey effort will help to build commitment among faculty and clarify expectations and goals for writing in ISyE.

2. Resurvey faculty, students, and affiliates about writing practices and expectations.

We will work with WEC staff and OMS to survey our students for the first time about their impressions of writing in the discipline, and complete corresponding surveys with faculty and industry affiliates. Data from these surveys will help us to establish points of disconnection in the curriculum and lead to service requests for panels and activities.

3. Use data from aims one and two to engage faculty with the ISyE writing guide.

While some faculty are already using elements of the writing guide in their courses, we hope to encourage both greater engagement with the guide and the increasing the number of annotated examples. Similarly, we hope to design instructional activities to address some of the most common trouble spots identified by faculty.

4. Explore tools and technologies to capture student projects and work products.

As faculty and students are engaged with an increasingly diverse array of application areas, methodologies and projects, we will endeavor to determine effective practices for evaluating students work products, including conventional genres like problem sets and projects, and more complex artifacts like computer code, data sets, and models. This process will begin with a survey similar to the one completed for the undergraduate writing guide.

Similarly, we hope to encourage faculty to use writing for group progress monitoring and student self evaluation. Current writing assignments often incorporate some self-report, but this introduced genre confusion among raters. By being clearer about audiences for work products, we hope to capture the benefits of reflective writing without compromising the benefits of professional genres.
Section 6: PROCESS USED TO CREATE THIS WRITING PLAN

How, and to what degree, were a substantial number of stakeholders in this unit (faculty members, instructors, affiliates, teaching assistants, undergraduates, others) engaged in providing, revising, and approving the content of this Writing Plan?

The faculty liaison held informal conversations with faculty to understand how their implementation of the writing plan was working. In consultation with Dan Emery, we developed this edition of the writing plan and reviewed it with faculty in the February 2, 2018, faculty meeting. All faculty members present at the meeting voted to approve the writing plan.
V. WEC Research Assistant (RA) Request Form

This form is required if RA funding is requested. If no RA funding is requested please check the box below.

☐ No RA Funding Requested

RAs assist faculty liaisons in the WEC Writing Plan implementation process. The specific duties of the RA are determined in coordination with the unit liaison and the WEC consultant, but should generally meet the following criteria: they are manageable in the time allotted, they are sufficient to their funding, and they have concrete goals and expectations (see below).

RA funding requests are made by appointment percent time (e.g., 25% FTE, 10% FTE, etc.). Appointment times can be split between two or more RAs when applicable (e.g., two 12.5% appointments for a total of 25% FTE request). Total funds (including fringe benefits when applicable) need to be calculated in advance by the liaison, usually in coordination with administrative personnel.

Please note that, outside of duties determined by the liaison, WEC RAs may be required to participate in specific WEC activities, such as meetings, Moodle discussion boards, and surveys.

RA Name (Use TBD for vacancies): TBD
RA Contact Information: email___, phone___
Period of appointment (Semester/Year to Semester/Year): Fall/19 to Spring/20
RA appointment percent time: 25%

Define in detail the tasks that the RA will be completing within the funding period:
RA tasks will depend in part on results of 2018-2019 faculty activities, including resurveying and faculty engagement activities. Potential tasks include revision and dispersal of student writing guide, development of new teaching materials in collaboration with faculty, etc.

Define deadlines as applicable (please note that all deadlines must be completed within the funding period):
All RA activities will be completed by May 2020.

Describe how frequently the RA will check in with the liaison:
Biweekly

Describe in detail the RA’s check-in process (e.g., via email, phone, in-person, etc.):
In-person meeting bi-weekly, plus emails as needed to stay on track.

---

1 An example for determining funding for appointments can be found on the WEC Liaison Moodle. This is for planning and example purposes only and cannot be used to determine final budget items for the Writing Plan.
### Financial Requests
(requests cannot include faculty salary support)  
drop-down choices will appear when cell next to “semester” is selected

Total Financial Request: $21,667.00

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
<th>Item</th>
<th>Cost</th>
<th>Item</th>
<th>Cost</th>
<th>Item</th>
<th>Cost</th>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey</td>
<td>$1,500.00</td>
<td>25% Graduate research assistant</td>
<td>$10,135.00</td>
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<td>$10,032.00</td>
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<td>Semester 6 Total:</td>
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### Rationale for costs and their schedule of distribution

Surveys will be conducted of students, faculty, and industry affiliates to assess impressions of writing in ISyE. A graduate RA will be hired in Year 2 to revise the ISyE Writing Guide, as well as assist with tasks identified during the Year 1 activities. Costs listed include fringe, and are based on 2018-2019 rates.

### Service Requests
drop-down choices will appear when a cell in the “service” column is selected

<table>
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<tr>
<th>Service</th>
<th>Fall 2018</th>
<th>Service</th>
<th>Fall 2019</th>
<th>Service</th>
<th>Fall 2019</th>
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### Description and rationale for services

4 workshops are requested across the Year 1 to revisit the structured conversations from the initial writing plan to engage new faculty.

Surveys will be conducted of students, faculty, and industry affiliates to assess impressions of writing in ISyE.
May 24, 2018

To: Lisa Miller
From: Robert McMaster, Office of Undergraduate Education
Subject: Decision regarding WEC plan funding proposal

The Department of Industrial and Systems Engineering recently requested the following funding to support its Writing Enriched Curriculum:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Fall 2018</td>
<td>Survey</td>
<td>$1,500.00</td>
</tr>
<tr>
<td>Fall 2019</td>
<td>25% Graduate Research Assistant</td>
<td>$10,135.00</td>
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<tr>
<td>Spring 2020</td>
<td>25% Graduate Research Assistant</td>
<td>$10,032.00</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
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<td><strong>$21,667.00</strong></td>
</tr>
</tbody>
</table>

All items above have been approved by the Office of Undergraduate Education, for a total of $21,667.00. Please email Pat Ferrian (ferri004@umn.edu) and Heidi Solomonson (heidis@umn.edu) within 30 days of the receipt of this letter with the EFS account string in your department that will receive these funds. Pat will transfer $1,500.00 in FY19, and $20,167.00 in FY20.

CC: Dan Emery, Pat Ferrian, Pamela Flash, Matt Luskey, Bryan Mosher, Jennifer Reckner, Rachel Rodrigue, Katie Sauer, Leslie Schiff, Heidi Solomonson