

# WRITING SySTEM



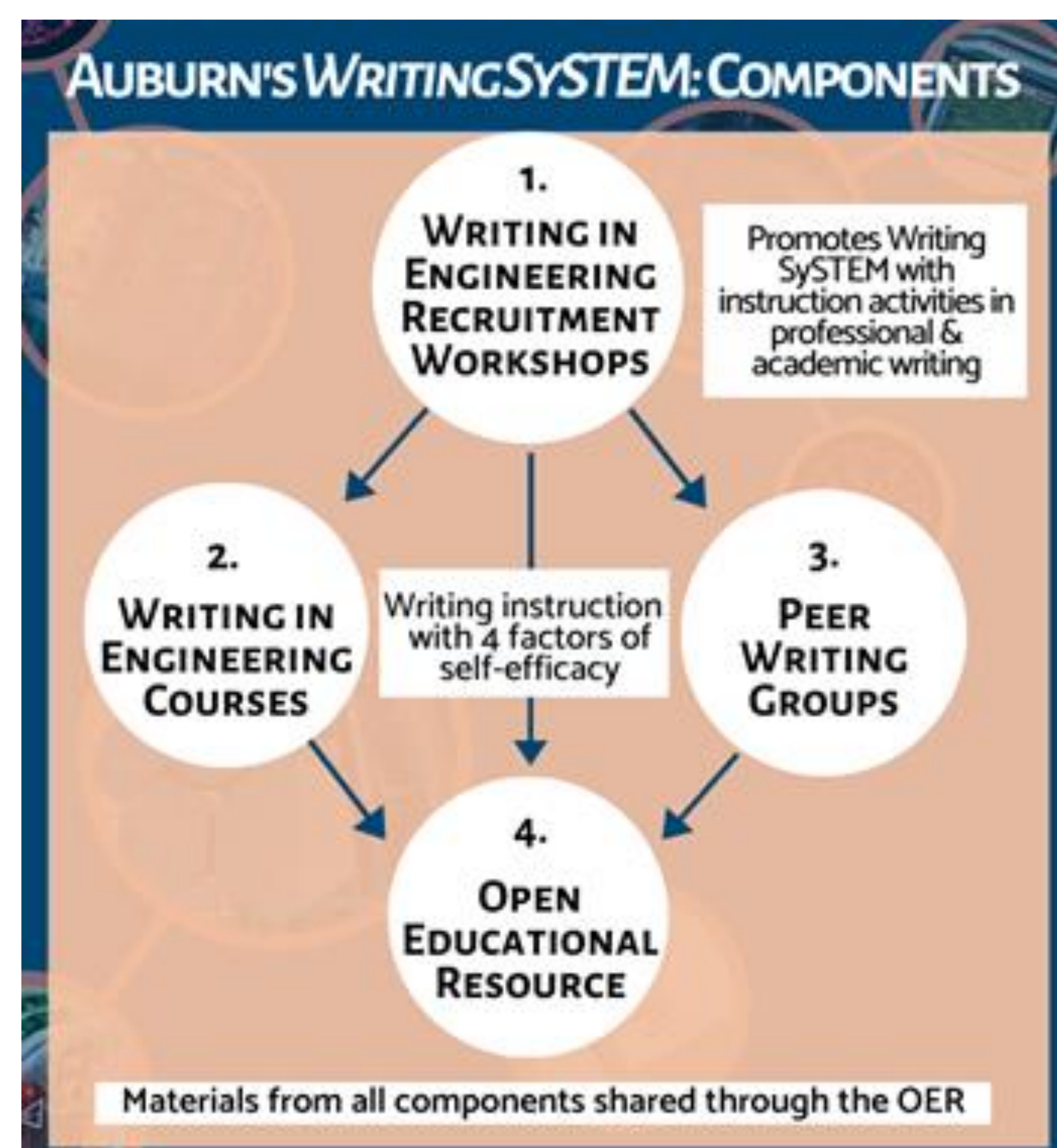
# Preview of The Writing SySTEM: A Systematic Approach to Graduate Writing Instruction and Intervention

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## Abstract

Research in graduate student development identifies self-efficacy as a central factor in writing ability and related outcomes. Typical ad-hoc approaches to STEM writing support lack the four factors proven to develop self-efficacy: previous successful experiences, the ability to compare others to self, positive and negative feedback from the community, and the ability to use healthy emotional and psychological strategies to approach new challenges. We seek to determine the relations among self-efficacy, self-regulation of writing, and writing ability in the context of engineering graduate education that includes systemic writing instruction and intervention structures. Our approach utilizes four components: workshops to teach writing skills, discipline-specific graduate writing courses, peer writing groups, and writing materials hosted on a publicly available Open Educational Resource (OER). Success is informed by the insights gained into the relationships across self-efficacy, self-regulation, and writing performance as determined through validated quantitative and qualitative instruments for measuring each factor.



## Description of Components

### Writing in Engineering Recruitment Workshops

- Focused on topics relevant to professional and academic writing
- Presented by engineering faculty in a discipline-specific context (e.g., graduate seminar)
- Used to recruit students into other program components

### Writing Courses for Graduate Engineers

- Offered by faculty in biosystems (small), aerospace (medium), and civil (large) engineering departments
- Promoted critical writing habits
- Created opportunities for students to receive direct instruction on the expectations and values for academic writing in the disciplines as well as professional communication for industry
- Implemented strategies for effective drafting and revising

### Peer Writing Groups

- Small groups of students (n < 10)
- Weekly meetings throughout semester
- Meetings facilitated by engineering faculty

### Open Educational Resource (OER)

- Materials available through an OER housed on UW's website
- Reference materials adapted to discipline specific context by participating faculty.
- Suitable for faculty and students in institutions without learning specialists, writing centers, WAC programs, and other means of support



## Implementation Timeline

	Fall, Yr 1	Spring, Yr 1	Fall, Yr 2	Spring, Yr 2	Fall, Yr 3	Spring, Yr 3
Writing in Engineering Recruitment Workshops	●	●	●	●	●	
Writing in Engineering Courses	●	●	●	●	●	●
Peer Writing Groups			●	●	●	●
Open Educational Resource (OER)	●	●	●	●	●	●

## Assessment

COMPONENTS	Writing in Engineering Recruitment Workshops	Writing in Engineering Courses	Peer Writing Groups	Open Educational Resource (OER)
TARGETED OUTCOMES	<ul style="list-style-type: none"> <li>• Recruitment into other components</li> </ul>	<ul style="list-style-type: none"> <li>• Increased self-efficacy</li> <li>• Increased self-regulatory strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Increased self-efficacy</li> <li>• Increased publication activity</li> </ul>	<ul style="list-style-type: none"> <li>• Distribution of materials</li> </ul>
MEASURES	<ul style="list-style-type: none"> <li>• Participants</li> <li>• Number of workshops given</li> <li>• Percentage of attendees recruited into Writing SySTEM</li> </ul>	<ul style="list-style-type: none"> <li>• WSRES*</li> <li>• MSKT*</li> <li>• Writing samples*                             <ul style="list-style-type: none"> <li>◦ Rubric</li> </ul> </li> <li>• Faculty teaching journal</li> <li>• Interviews</li> </ul>	<ul style="list-style-type: none"> <li>• WSRES*</li> <li>• MSKT*</li> <li>• Writing samples*                             <ul style="list-style-type: none"> <li>◦ Rubric</li> </ul> </li> <li>• Publication record</li> <li>• Continuation of writing group participation</li> <li>• Interviews</li> </ul>	<ul style="list-style-type: none"> <li>• Use analytics                             <ul style="list-style-type: none"> <li>◦ Clicks and views</li> <li>◦ Downloads</li> </ul> </li> <li>• User survey responses</li> <li>• Feedback from writing groups and courses</li> </ul>
<p>*CONTRIBUTES TO RESEARCH QUESTION</p> <p>What is the relationship between self-efficacy, self-regulation, and performance outcomes in the context of engineering graduate education?</p>				

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