

Guide to Universal Design of College Algebra
 Design Rubric for Class Supplements/Handouts/Resources

Learning Resource Element	Poor Universal Usability Score = 0 - 2	Fair Universal Usability Score = 3 - 5	Excellent Universal Usability Score = 6 - 10	Score
Math language vocabulary	<p>No definitions for math vocabulary are provided.</p> <p>Content uses formal math language exclusively.</p>	<p>A glossary is provided at the end of the document.</p> <p>Definitions include both formal math language and natural language.</p> <p>Web-based resources: Math language vocabulary is hyperlinked to a definition.</p>	<p>Definitions are located close to use of the word.</p> <p>Definitions include both formal math language and everyday language.</p> <p>Definitions include examples and graphics.</p> <p>Web-based resources: Math language vocabulary is directly associated with its definition with an example that displays in the context of use such that the user does not need to leave and return to the page.</p> <p>Definitions print when the page is printed.</p>	
Content summaries	<p>Summary of content is not offered or is offered in paragraph form with complex text.</p>	<p>Summary of content (e.g. rules, solution steps, patterns) are described in outline form.</p>	<p>Summary of content (e.g. rules, solution steps, patterns) are displayed in a matrix and/or graphic image.</p> <p>Design of the matrix and/or graphic image emphasizes the relationships between the concepts depicted.</p> <p>Textual explanation of the matrix and/or graphic image are given to articulate the pattern, relationship, or comparison being described.</p> <p>Related basic concepts and math facts underlying the content are offered.</p>	

This material is based upon work supported by the National Science Foundation (NSF) under Grant No. HRD-0726252. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

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Solutions	Solutions to math problems are not explained.	Solutions to math problems are explained step-by-step.	Solutions to math problems are explained step-by-step, including steps that might seem obvious, such as concepts and math facts that have been taught in previous coursework.	
Examples of a concept	Examples are not provided or only one example is provided.	Provide multiple examples of a concept.	Provide multiple examples of a concept. Provide non-examples and/or common errors: examples that describe related instances where the concept does <i>not</i> apply. Include explanation of why the concept does not apply.	
Information design	<p>No heading levels are used to chunk related content.</p> <p>Very little white space is used.</p> <p>Math examples are included within paragraphs of text.</p> <p>Color is used without semantic meaning.</p> <p>Web-based resources: Advertisements are placed close to content.</p> <p>Links to external resources are difficult to distinguish from links within the site.</p>	<p>Content is uncluttered, using white space and multiple heading levels to visually connect related content.</p>	<p>Content is uncluttered, using white space and multiple heading levels to visually connect related content.</p> <p>Bulleted lists are preferred over paragraphs of text.</p> <p>Math examples are displayed separately from textual explanations.</p> <p>When color has semantic meaning, a legend is provided.</p> <p>Color is not the only method used to convey meaning.</p> <p>Sans-serif fonts are used and text is left-aligned.</p> <p>Web-based resources: Follow accessibility guidelines established by the World Wide Web Consortium.</p>	

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Practice exercises	No practice exercises are offered.	Multiple types of practice exercises are offered.	Multiple types of practice exercises are offered with varying degrees of difficulty, such as: remembering facts/rules, applying facts/rules, analyzing concepts, and creating examples. Hints are available including basic concepts underlying the math concept being practiced, as well as any relevant rules or math facts. Web-based resources: Hints and error alerts are offered and include references to numbers used in the problem being solved.	
Delivery format	Students are provided a paper copy only.	Electronic version of content is available to students.	Electronic version of content is available to students. Electronic versions are text-based such that they can be read by screen-reader software. A quick test if this is to confirm that individual text characters can be copied and pasted. Where images are used to convey meaning, they are also described in text.	

References

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- Ives, B., Hoy, C. (2003) Graphic organizers applied to higher-level secondary mathematics. *Learning Disabilities Research & Practice*, 18(1), 36-51.

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Maccini, P., Gagnon, J. (2005). Math Graphic Organizers for students with disabilities. Retrieved from http://www.k8accesscenter.org/training_resources/documents/MathGraphicOrg.pdf July 29, 2008.

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