ORU

Computing and Mathematics

College of Science and Engineering

Master Program Outcome Rubrics

WPA-CIT-Master Rubric

Course: ORU Online

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-1-A-Coding Style	4 points Indentation patterns and bracket placement satisfy course style guides in every respect.	3 points Indentation patterns and bracket placement are consistent.	2 points There are some inconsistencies in use of indentation and brackets.	1 point Indentation and bracket placement is highly inconsistent.	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-1-B-Program Documentation	4 points Includes name, date, assignment title, and program purpose; clearly and effectively documented, including variable, subprogram, and control structure descriptions.	3 points Includes name, date, assignment title, and program purpose; clearly documented including variable, subprogram, and control structure descriptions.	2 points Includes name, date, assignment title, and program purpose; basic documentation provided for variables and subprogram.	1 point Includes name, date, and assignment title; only sparse documentation present in body of program	0 points Not attempted	/ 4
CIT-1-C-Algorithm	4 points Algorithm is correct, solving the problem correctly as well as exhibits creativity.	3 points Algorithm is correct and solves problem correctly.	2 points Algorithm is correct and solves problem, but is awkward or inefficient.	1 point Algorithm does not solve problem correctly.	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-1-D-Program Design	4 points Can implement solutions using control structures to solve large problems in a high-level language. Can analyze problems, identify classes, assign responsibilities, and design solutions for fairly complex cases. Can create analysis/design artifacts such as class diagrams for fairly complex cases.	3 points Can implement solutions using control structures to solve reasonable sized problems in a high-level language; Can analyze problems, identify classes, assign responsibilities, and design solutions for reasonably complex cases; Can create analysis/design artifacts such as class diagrams for reasonably complex cases.	2 points Can implement solutions using basic control structures to solve simple problems in a high-level language; can analyze problems, identify classes, assign responsibilities, and design solutions for simple cases; can create some analysis/ design artifacts such as class diagrams.	1 point Cannot implement solutions using simple control structures in a high-level language; cannot analyze problems, identify classes, assign responsibilities, or design solutions; cannot create analysis/design artifacts such as class diagrams.	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-1-E-Execution/Output	4 points Executes without errors; clear and concise user prompts; all specified output has been correctly produced in an appropriate format.	3 points Executes without errors; user prompts are basic but understandable; correct output has been produced, but presentation could be improved.	2 points Executes without errors; user prompts contain little information and poor design; program is producing output, but not everything correct.	1 point Does not execute due to compiler or run-time errors; user prompts are misleading or non-existent; no output produced.	0 points Not attempted	/ 4
CIT-2-A-Problem Decomposition	4 points Able to decompose problem for efficient implementation, and modify problem definition as new information arrives	3 points Able to completely decompose problem into components, and formulate multiple solution strategies	2 points Able to adequately decompose problem into components	1 point Able to produce computing formulations only for simple problems that do not require decomposition	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-2-B-Identify Computing Requirements	4 points Able to identify all computing requirements for given problem, as well as identify flaws and/or improvements	3 points Able to identify all computing requirements for given problem and formulate a solution strategy	2 points Able to identify most computing requirements for given problem and formulate a solution strategy	1 point Unable to identify computing requirements for given problem and formulate a solution strategy	0 points Not attempted	/ 4
CIT-2-C-Solution Design	4 points Able to develop multiple requirements specifications, and estimate behavior of possible solutions	3 points Able to develop complete hardware and software requirements specifications	2 points Able to develop simple hardware and software requirements specifications	1 point Unable to develop simple hardware and software requirements specifications	0 points Not attempted	/ 4
CIT-2-D-Implementation Design	4 points Provides creative design approach and fully functional solution to problem	3 points Provides fully functional solution to problem using standard design principles	2 points Provides workable solution to problem	1 point Unable to provide working design	0 points Not attempted	/ 4

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Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-3-A-Logical Organization of Ideas for Thesis Development (GEN-4-C-2)	4 points Organizes all ideas in logical sequence for clear thesis development through unified, cogent, and coherent presentation of material	3 points Organizes most ideas in logical sequence for clear thesis development through unified, cogent, and coherent presentation of material	2 points Organizes some ideas in logical sequence for clear thesis development through unified, cogent, and coherent presentation of material	1 point Organizes ideas illogically for thesis development through lack of unified, cogent, and coherent presentation of material	0 points Does not attempt to organize ideas for thesis development	/ 4
CIT-3-B-Correct Mechanics and Grammar (GEN-4-C-4)	4 points Uses mechanics and grammar with no errors	3 points Uses mechanics and grammar with few minor errors	2 points Uses mechanics and grammar with some minor errors	1 point Uses mechanics and grammar with excessive minor or a few major errors	0 points Does not attempt to use correct mechanics or grammar	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-3-C-Engaging and Appropriate Style (GEN-4-C-5)	4 points Uses engaging and appropriate style, holding audience's interest and attention throughout	3 points Uses engaging and mostly appropriate style, holding audience's interest and attention most of the time	2 points Uses appropriate style, holding audience's interest and attention some of the time	1 point Uses inappropriate style and/or does not hold audience's interest and attention	0 points Does not attempt to use appropriate style or hold audience's interest and attention	/ 4
CIT-3-D-Correct Use of Required Documentation Style (GEN-4-C-8)	4 points Meets required documentation style fully and accurately with no errors	3 points Meets required documentation style with few minor errors	2 points Meets required documentation style with some minor errors	1 point Meets required documentation style with excessive minor or major errors	0 points Does not attempt to meet required documentation style	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-3-E-Technical Communication	4 points Can communicate technical concepts in clear and concise manner, adapting to audience, transitioning to suitable metaphors for non-specialists	3 points Offers clear insight and presents technology with minimal jargon	2 points Can speak technically to problem at hand	1 point Cannot communicate technical essence of subject at hand	0 points Not attempted	/ 4
CIT-4-A-Knowledge of Religious and/or Professional Codes of Ethics (GEN-4-A-2)	4 points Demonstrates thorough knowledge of different ethical perspectives and concepts derived from an ethical framework such as religious and/or professional codes of ethics	3 points Demonstrates adequate knowledge of different ethical perspectives and concepts derived from an ethical framework such as religious and/or professional codes of ethics	2 points Demonstrates limited knowledge of different ethical perspectives and concepts derived from an ethical framework such as religious and/or professional codes of ethics	1 point Demonstrates incorrect or only superficial knowledge of different ethical perspectives and concepts derived from an ethical framework such as religious and/or professional codes of ethics	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-4-B-Identification of Ethical Dilemmas (GEN-4-A-5)	4 points Identifies ethical dilemmas clearly and effectively articulates ethical principles of dilemma	3 points Identifies ethical dilemmas and articulates ethical principles of dilemma	2 points Identifies ethical dilemmas	1 point Identifies ethical dilemmas inappropriately and does not articulate ethical principles of dilemma	0 points Not attempted	/ 4
CIT-4-C-Analysis of Ethical Dilemmas (GEN-4-A-9)	4 points Analyzes ethical dilemma thoroughly and insightfully, examining consequences from Christian worldview	3 points Analyzes ethical dilemma thoroughly, examining consequences from Christian worldview	2 points Analyzes appropriately ethical dilemma, examining consequences from Christian worldview	1 point Analyzes inappropriately ethical dilemma and does not examine consequences from Christian worldview	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-4-D-Evaluation of Different Ethical Decisions (GEN-4-A-11)	4 points Raises consistently multiple relevant critical questions concerning ethical decisions and defends position with good reasoning and understanding of opposing views	3 points Raises a few relevant critical questions concerning ethical decisions and defends position with good reasoning and understanding of opposing views	2 points Raises a few critical questions concerning ethical decisions but defends position with limited reasoning and understanding of opposing views	1 point Raises irrelevant questions concerning ethical decisions and does not defend position with good reasoning and understanding of opposing views	0 points Not attempted	/ 4
CIT-5-A-Roles and Responsibilities	4 points Exceeds expectations with respect to team role duties	3 points Fulfills team role duties	2 points Fulfills most team role duties	1 point Fails to fulfills team role duties	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-5-B-Effective Interactions	4 points Always solicits input from other team members and actively listens to input from others; manages disagreement well	3 points Values input from other team members and actively listens to input from others	2 points Engages in team communications; gives reasonable respect to teammates	1 point Dominating individual; limits participation of others; provides little contribution to group; or intolerant of other ideas and perspectives	0 points Not attempted	/ 4
CIT-5-C-Group Communication	4 points Works exceptionally well to provide documentation of progress	3 points Provides consistent and timely updates to team members on a regular basis	2 points Provides updates to team members	1 point Provides little communication to other members regarding the project progress	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-6-A-Product Value Proposition	4 points Able to clearly articulate proposed project's value proposition from perspective of all key stakeholders	3 points Can articulate value proposition from perspective of primary user	2 points Presents value proposition perspective generally aligned to actual value proposition	1 point Unclear on value proposition from any perspective	0 points Not attempted	/ 4
CIT-6-B-Requirements Capture	4 points Effectively captures all product requirements; integrates user inputs; maps design elements to each	3 points Captures requirements from both product and user perspectives, but doesn't provide requirements coverage implementation map	2 points Demonstrates need for capturing requirements	1 point Gives little regard to process of effectively capturing product and user requirements, and provides little to no evidence of deterministically mapping implementation to requirements	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-6-C-Software Development Life Cycle	4 points Clearly maps out all SDLC stages as they relate to project	3 points Shows strong consideration for SLDC in pursuit of project	2 points Generally gives awareness of SDLC in pursuit of project	1 point Does not show obvious consideration to SLDC	0 points Not attempted	/ 4
CIT-6-D-Project Management	4 points Clearly applies PM to pursuit of project	3 points Shows strong consideration for PM in pursuit of project	2 points Generally, gives awareness of PM in pursuit of project	1 point Does not show obvious consideration to PM	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-6-E- Structured Programming	4 points Demonstrates mastery of Structured Programming methodology	3 points Demonstrates skills in Structured Programming methodology in all key areas	2 points Demonstrates skills in Structured Programming methodology, with some key areas missing full attention	1 point Demonstrates few, if any, skills in Structured Programming methodology	0 points Not attempted	/ 4
CIT-6-F- Testing and Evaluation	4 points Provides full testing coverage of all of key product features and user interfaces	3 points Provides some testing coverage of all of key product features and user interfaces	2 points Demonstrates understanding of needs for testing coverage	1 point Makes little attempt to provide reasonable testing coverage and/or shows little consideration for testing	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CIT-6-G-System Selection and Administration.	4 points Correctly identifies an appropriate system design and provides clear understanding of its administration needs during production use	3 points Selects a reasonable system design and shows some understanding of administration needs	2 points Selects a system design and gives some attention to administration needs	1 point Selects inappropriate system design and/or gives little to no consideration of operational needs	0 points Not attempted	/ 4

Total	/ 112

Overall Score

Level 4	Level 3	Level 2	Level 1	Level 0
101 points minimum	67 points minimum	39 points minimum	17 points minimum	0 points minimum

WPA-CSC-Master Rubric

Course: ORU Online

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CSC-1-A-Coding style	4 points Indentation patterns and bracket placement satisfy course style guides in every respect.	3 points Indentation patterns and bracket placement are consistent.	2 points Indentation and bracket placement is highly inconsistent.	1 point Not attempted	0 points No evidence of storytelling proficiency in research and writing or sensitivity to culture or organizational difference	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CSC-1-B-Program Documentation	4 points Includes name, date, assignment title, program purpose Clearly and effectively documented including variable, subprogram, and control structure descriptions.	3 points Includes name, date, assignment title, program purpose Clearly documented including variable, subprogram, and control structure descriptions.	2 points Includes name, date, assignment title, program purpose Basic documentation provided for variables and subprogram	1 point Includes name, date, assignment title Only sparse documentation present in body of program	0 points Not attempted	/ 4
CSC-1-C-Algorithm	4 points Algorithm is correct, solving the problem correctly as well as exhibits creativity.	3 points Algorithm is correct and solves problem correctly	2 points Algorithm is correct and solves problem, but is awkward or inefficient.	1 point Algorithm does not solve the problem correctly	0 points Not attempted	/ 4
CSC-1-D-Program Design	4 points	3 points	2 points	1 point	0 points Not attempted	/ 4

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Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
	Can implement solutions using control structures to solve large problems in a high-level language. Can analyze problems, identify classes, assign responsibilities, and design solutions for fairly complex cases. Can create analysis/design artifacts such as class diagrams for fairly complex cases.	Can implement solutions using control structures to solve reasonable sized problems in a high-level language. Can analyze problems, identify classes, assign responsibilities, and design solutions for reasonably complex cases. Can create analysis/design artifacts such as class diagrams for reasonably complex cases	Can implement solutions using basic control structures to solve simple problems in a high-level language. Can analyze problems, identify classes, assign responsibilities, and design solutions for simple cases. Can create some analysis/ design artifacts such as class diagrams.	Cannot implement solutions using simple control structures in a high-level language. Cannot analyze problems, identify classes, assign responsibilities, or design solutions. Cannot create analysis/design artifacts such as class diagrams.		

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Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CSC-1-E-Execution/Output	4 points Executes without errors Clear and concise user prompts All specified output has been correctly produced in an appropriate format	3 points Executes without errors User prompts are basic but understandable Correct output has been produced, but presentation could be improved.	2 points Executes without errors User prompts contain little information, poor design. Program is producing output, but not everything is correct.	1 point Does not execute due to compiler or run-time errors User prompts are misleading or non-existent No output produced	0 points Not attempted	/ 4
CSC-2-A-Problem decomposition	4 points Students are able to decompose a problem for efficient implementation, modify the problem definition as new	3 points Students are able to completely decompose the problem into components, a	2 points Students are able to adequately decompose the problem into components,	1 point Students are able to produce computing for mulations only for simple proble	0 points Not attempted	/ 4

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Criteria	Level 4	Level 3 nd formulate multiple solution strategies	Level 2	Level 1 ms that do not require decomposition	Level 0	Criterion Score
	information arrives Students are able to decompose a problem for efficient implementation, modify the problem definition as new information arrives Students are able to decompose a problem for efficient implementation, modify the problem definition as new information arrives					

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CSC-2-B-Identify computing requirements	4 points Student is able to identify all the computing requirements for the given problem as well as identify flaws and/or improvements	3 points Student is able to identify all of the computing requirements for the given problem and formulate a solution strategy	2 points Student is able to identify most of the computing requirements for the given problem and formulate a solution strategy	1 point Student is unable to identify the computing requirements for the given problem and formulate a solution strategy	0 points Not attempted	/ 4
CSC-2-C-Solution Design	4 points Students are able to develop multiple requirements specifications, and estimate behavior of possible solutions	3 points Students are able to develop complete hardware and software requirements specifications.	2 points Students are able to develop simple hardware and software requirements specifications.	1 point Students are unable to develop simple hardware and software requirements specifications.	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CSC-2-D-Implementation Design	4 points Student provides a creative design approach and a fully functional solution to problem	3 points Student provides a fully functional solution to problem using standard design principles	2 points Student provides a workable solution to problem	1 point Student is unable to provide a working design	0 points Not attempted	/ 4
CSC-3-A-Logical organization of ideas for thesis development (GEN-4-C-2)	4 points Organizes all ideas in a logical sequence for clear thesis development through a unified, cogent, and coherent presentation of material	3 points Organizes most ideas in logical sequence for clear thesis development through a unified, cogent, and coherent presentation of material	2 points Organizes some ideas in logical sequence for clear thesis development through a unified, cogent, and coherent presentation of material	1 point Organizes ideas illogically for thesis development through lack of a unified, cogent, and coherent presentation of material	0 points Does not attempt to organize ideas for thesis development.	/ 4
CSC-3-B-Correct mechanics and grammar (GEN-4-C-4)	4 points Uses mechanics and grammar with no errors	3 points Uses mechanics and grammar with few minor errors	2 points Uses mechanics and grammar with some minor errors	1 point Uses mechanics and grammar with excessive minor or a few major errors	0 points Does not attempt to use correct mechanics or grammar	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CSC-3-C- Engaging and appropriate style (GEN-4-C-5)	4 points Uses engaging and appropriate style, holding the audience's interest and attention throughout	3 points Uses engaging and mostly appropriate style, holding the audience's interest and attention most of the time	2 points Uses appropriate style, holding the audience's interest and attention some of the time	1 point Uses inappropriate style and/or does not hold the audience's interest and attention	0 points Does not attempt to use appropriate style or hold the audience's interest and attention	/ 4
CSC-3-D- Correct use of required documentation style (GEN-4-C-8)	4 points Meets the required documentation style fully and accurately with no errors	3 points Meets the required documentation style with few minor errors	2 points Meets the required documentation style with some minor errors	1 point Meets the required documentation style with excessive minor or major errors	0 points Does not attempt to meet the required documentation style	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CSC-3-E-Technical communication	4 points Can communicate technical concepts in a clear and concise manner, adapting to the audience, transitioning to suitable metaphors for non-specialists.	3 points Offers clear insight and presents the technology with minimal jargon.	2 points Can speak technically to the problem at hand.	1 point Cannot communicate the technical essence of the subject at hand.	0 points Not attempted	/ 4
CSC-4-A-Knowledge of religious and/or professional codes of ethics (GEN-4-A-2)	4 points Demonstrates a thorough knowledge of different ethical perspectives and concepts derived from an ethical framework such as religious and/or professional codes of ethics	3 points Demonstrates adequate knowledge of different ethical perspectives and concepts derived from an ethical framework such as religious and/or professional codes of ethics	2 points Demonstrates limited knowledge of different ethical perspectives and concepts derived from an ethical framework such as religious and/or professional codes of ethics	1 point Demonstrates an incorrect or only a superficial knowledge of different ethical perspectives and concepts derived from an ethical framework such as religious and/or professional codes of ethics	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CSC-4-B-Identification of ethical dilemmas (GEN-4-A-5)	4 points Identifies ethical dilemmas clearly and effectively articulates ethical principles of the dilemma	3 points Identifies ethical dilemmas and articulates ethical principles of the dilemma	2 points Identifies ethical dilemmas	1 point Identifies ethical dilemmas inappropriately and does not articulate ethical principles of the dilemma	0 points Not attempted	/ 4
CSC-4-C-Analysis of ethical dilemma (GEN-4-A-9)	4 points Analyzes an ethical dilemma thoroughly and insightfully, examining consequences from a Christian worldview	3 points Analyzes an ethical dilemma thoroughly, examining consequences from a Christian worldview	2 points Analyzes appropriately an ethical dilemma, examining consequences from a Christian worldview	1 point Analyzes inappropriately an ethical dilemma and does not examine consequences from a Christian worldview	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CSC-4-D-Evaluation of different ethical decisions (GEN-4-A-11)	4 points Raises consistently multiple relevant critical questions concerning ethical decisions and defends a position with good reasoning and understanding of opposing views	3 points Raises a few relevant critical questions concerning ethical decisions and defends a position with good reasoning and understanding of opposing views	2 points Raises a few critical questions concerning ethical decisions but defends a position with limited reasoning and understanding of opposing views	1 point Raises irrelevant questions concerning ethical decisions and does not defend a position with good reasoning and understanding of opposing views	0 points Not attempted	/ 4
CSC-5-A-Roles and Responsibilities	4 points Exceeds expectations with respect to team role duties	3 points Fulfills team role duties	2 points Fulfills most team role duties	1 point Fails to fulfills team role duties	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CSC-5-B-Effective Interactions	4 points Always solicits input from other team members and actively listens to input from others. Manages disagreement well.	3 points Values input from other team members and actively listens to input from others	2 points Engages in team communications, gives reasonable respect to teammates	1 point Dominating individual, limits participation of others, provides little contribution to group, or intolerant of other ideas and perspectives	0 points Not attempted	/ 4
CSC-5-C-Group Communication	4 points Works exceptionally well to provide documentation of progress	3 points Provides consistent and timely updates to team members on a regular basis	2 points Provides updates to team members	1 point Provides little communication to other members regarding the project progress	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CSC-6-A-Associating Appropriate Theory to the Challenge	4 points Enumerates the applicable theoretical possibilities and limits for each major subsystem.	3 points Clearly identifies the app licable theoretical computer science concepts to the challenge.	2 points For each major subsystem, recognizes whether a formal CS theory may apply.	1 point Is unclear on how to connect theory to the challenge.	0 points Not attempted	/ 4
CSC-6-B-Associating Appropriate Software Development Fundamentals to the Challenge	4 points Can detail how the software develop ment best practices can be applied to enhance the solution.	3 points Clearly identifies the applicable software develop ment fundamentals and/or best practices to the challenge(s).	2 points Identifies at least one applicable software development fundamental.	1 point Gives little regard to applying software development fundamentals to the challenge.	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CSC-6-C-Applying Theory where appropriate	4 points Formally characterizes the nature of the developed software with the attributes of the applied theory.	3 points Utilizes the nature of each theoretical computer science principle in the software development	2 points Is somewhat guided by the theoretical principles in the software development.	1 point Shows little regard to applying theoretical principles to the software development effort.	0 points Not attempted	/ 4
CSC-6-D-Best Practices with Tools and Environments	4 points Articulates, documents and analyzes the expected benefits for applying the applicable software development methods.	3 points Demonstrates awareness of the anticipated benefits for the applicable software development methods.	2 points Bases the software development on best practices.	1 point Does not show obvious consideration of prior art.	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
CSC-6-E-Algorithm Recognition and Analysis	4 points Can explain in detail the rationale for the chosen algorithm in comparison to other options.	3 points Identifies and applies an appropriate algorithm with reasonable analysis for its choice.	2 points Demonstrates an awareness of a class of algorithms that are appropriate to the problem.	1 point Demonstrates little if any knowledge of appropriate algorithms.	0 points Not attempted	/ 4

Total	/ 104

Overall Score

Level 4	Level 3	Level 2	Level 1	Level 0
65 points minimum	43 points minimum	25 points minimum	11 points minimum	0 points minimum

ORU MASTER OUTCOME RUBRIC

Academic Department: *Computing & Mathematics*

Program Name: (Major, Major/Concentration) *Information Technology Online*

Program Outcome Number: *1*

Program Outcome Description: *Apply knowledge of computing and mathematics appropriate to the discipline.*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	IT OL-1-A-Logical organization of ideas for thesis development	Organizes all ideas in a logical sequence for clear thesis development through a unified, cogent, and coherent presentation of material	Organizes most ideas in logical sequence for clear thesis development through a unified, cogent, and coherent presentation of material	Organizes some ideas in logical sequence for clear thesis development through a unified, cogent, and coherent presentation of material	Organizes ideas illogically for thesis development through lack of a unified, cogent, and coherent presentation of material	Does not attempt to organize ideas for thesis development
	IT OL-1-B-Correct mechanics and grammar	Uses mechanics and grammar with no errors	Uses mechanics and grammar with few minor errors	Uses mechanics and grammar with some minor errors	Uses mechanics and grammar with excessive minor or a few major errors	Does not attempt to use correct mechanics or grammar
	IT OL-1-C-Engaging and appropriate style	Uses engaging and appropriate style, holding the audience's interest and attention throughout	Uses engaging and mostly appropriate style, holding the audience's interest and attention most of the time	Uses appropriate style, holding the audience's interest and attention some of the time	Uses inappropriate style and/or does not hold the audience's interest and attention	Does not attempt to use appropriate style or hold the audience's interest and attention

	IT OL-1-D-Correct use of required documentation style	Meets the required documentation style fully and accurately with no errors	Meets the required documentation style with few minor errors	Meets the required documentation style with some minor errors	Meets the required documentation style with excessive minor or major errors	Does not attempt to meet the required documentation style
	IIT OL-1-E-Technical communication	Can communicate technical concepts in a clear and concise manner, adapting to the audience, transitioning to suitable metaphors for non-specialists.	Offers clear insight and presents the technology with minimal jargon.	Can speak technically to the problem at hand.	Cannot communicate the technical essence of the subject at hand.	Not attempted

ORU MASTER OUTCOME RUBRIC

Academic Department: *Computing & Mathematics*

Program Name: (Major, Major/Concentration) *Information Technology Online*

Program Outcome Number: *2*

Program Outcome Description: *Analyze a problem, and identify and define the computing requirements appropriate to its solution.*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	IT OL-2-A-Problem decomposition	Students are able to decompose a problem for efficient implementation, modify the problem definition as new information arrives.	Students are able to completely decompose the problem into components, and formulate multiple solution strategies	Students are able to adequately decompose the problem into components	Students are able to produce computing formulations only for simple problems that do not require decomposition	Not attempted
	IT OL-2-B-Identify computing requirements	Student is able to identify all the computing requirements for the given problem as well as identify flaws and/or improvements	Student is able to identify all of the computing requirements for the given problem and formulate a solution strategy	Student is able to identify most of the computing requirements for the given problem and formulate a solution strategy	Student is unable to identify the computing requirements for the given problem and formulate a solution strategy	Not attempted

ORU MASTER OUTCOME RUBRIC

Academic Department: *Computing & Mathematics*

Program Name: (Major, Major/Concentration) *Information Technology Online*

Program Outcome Number: *3*

Program Outcome Description: *Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	IT OL-3-A-Implementation Design	Student provides a creative design approach and a fully functional solution to problem	Student provides a fully functional solution to problem using standard design principles	Student provides a workable solution to problem	Student is unable to provide a working design	Not attempted
	IT OL-3-B-System selection and administration.	Correctly identifies an appropriate system design and provides clear understanding of its administration needs during production use.	Selects a reasonable system design and shows some understanding of the administration needs.	Selects a system design and gives some attention to administration needs.	Selects and inappropriate system design and/or gives little to know consideration of operational needs.	Not attempted

ORU MASTER OUTCOME RUBRIC

Academic Department: *Computing & Mathematics*

Program Name: (Major, Major/Concentration) *Information Technology Online*

Program Outcome Number: *4*

Program Outcome Description: *Function effectively on teams to accomplish a common goal*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	IT OL-4-A-Roles and Responsibilities	Exceeds expectations with respect to team role duties	Fulfills team role duties	Fulfills most team role duties	Fails to fulfill team role duties	Not attempted
	IT OL-4-B-Effective Interactions	Always solicits input from other team members and actively listens to input from others. Manages disagreement well	Values input from other team members and actively listens to input from others	Engages in team communications, gives reasonable respect to teammates	Dominating individual, limits participation of others, provides little contribution to group, or intolerant of other ideas and perspectives	Not attempted
	IT OL-4-C-Group Communication	Works exceptionally well to provide documentation of progress	Provides consistent and timely updates to team members on a regular basis	Provides updates to team members	Provides little communication to other members regarding the project progress	Not attempted

Academic Department: *Computing & Mathematics*

Program Name: (Major, Major/Concentration) *Information Technology Online*

Program Outcome Number: *5*

Program Outcome Description: *Professional, ethical, legal, security, and social issues and responsibilities*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	ITOL-5-A-Knowledge of religious and/or professional codes of ethics	Demonstrates a thorough knowledge of different ethical perspectives and concepts derived from an ethical framework such as religious and/or professional codes of ethics	Demonstrates adequate knowledge of different ethical perspectives and concepts derived from an ethical framework such as religious and/or professional codes of ethics	Demonstrates limited knowledge of different ethical perspectives and concepts derived from an ethical framework such as religious and/or professional codes of ethics	Demonstrates an incorrect or only a superficial knowledge of different ethical perspectives and concepts derived from an ethical framework such as religious and/or professional codes of ethics	Not attempted
	IT OL-5-B-Identification of ethical dilemmas	Identifies ethical dilemmas clearly and effectively articulates ethical principles of the dilemma	Identifies ethical dilemmas and articulates ethical principles of the dilemma	Identifies ethical dilemmas	Identifies ethical dilemmas inappropriately and does not articulate ethical principles of the dilemma	Not attempted
	IT OL-5-C-Analysis of ethical dilemma	Analyzes an ethical dilemma thoroughly and insightfully, examining consequences from a Christian worldview	Analyzes an ethical dilemma thoroughly, examining consequences from a Christian worldview	Analyzes appropriately an ethical dilemma, examining consequences from a Christian worldview	Analyzes inappropriately an ethical dilemma and does not examine consequences from a Christian worldview	Not attempted

IT OL-5-D-Evaluation of different ethical decisions	Raises consistently multiple relevant critical questions concerning ethical decisions and defends a position with good reasoning and understanding of opposing views	Raises a few relevant critical questions concerning ethical decisions and defends a position with good reasoning and understanding of opposing views	Raises a few critical questions concerning ethical decisions but defends a position with limited reasoning and understanding of opposing views	Raises irrelevant questions concerning ethical decisions and does not defend a position with good reasoning and understanding of opposing views	Not attempted

ORU MASTER OUTCOME RUBRIC	Fall 2018

Academic Department: *Computing & Mathematics*

Program Name: (Major, Major/Concentration) *Information Technology Online*

Program Outcome Number: *6*

Program Outcome Description: *Communicate effectively with a range of audiences*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	IT OL-6-A-Technical communication	Can communicate technical concepts in a clear and concise manner, adapting to the audience, transitioning to suitable metaphors for non-specialists.	Offers clear insight and presents the technology with minimal jargon.	Can speak technically to the problem at hand.	Cannot communicate the technical essence of the subject at hand.	Not attempted
	IT OL-6-B-Group Communication	Works exceptionally well to provide documentation of progress	Provides consistent and timely updates to team members on a regular basis	Provides updates to team members	Provides little communication to other members regarding the project progress	Not attempted

ORU MASTER OUTCOME RUBRIC   Fall

Academic Department: *Computing & Mathematics*

**Program Name: (Major,   *Information Technology Online*
Major/Concentration)**

Program Outcome Number: *7*

Program Outcome Description: *Analyze the local and global impact of computing on individuals, organizations, and society.*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	IT OL-7-A-Analyze local impact of computing on individuals and society	Identifies the local impact of computing solutions/technology/economic activity on the public, environment and society thoroughly and with insight.	Identifies the local impact of computing solutions/technology/economic activity on the public, environment and society with some insight.	Identifies the local impact of computing solutions/technology/economic activity on the public, environment and society with little insight.	Identifies the local impact of computing solutions/technology/economic activity on the public, environment and society with no insight.	Not attempted.
	IT OL-7-B-Analyze global impact of computing on individuals and society	Identifies the global impact of computing solutions/technology/economic activity on the public, environment and society thoroughly and with insight.	Identifies the global impact of computing solutions/technology/economic activity on the public, environment and society with some insight.	Identifies the global impact of computing solutions/technology/economic activity on the public, environment and society with little insight.	Identifies the global impact of computing solutions/technology/economic activity on the public, environment and society with no insight.	Not attempted.

Academic Department: *Computing & Mathematics*

Program Name: (Major, Major/Concentration) *Information Technology Online*

Program Outcome Number: *8*

Program Outcome Description: *Ability to engage in continuing professional development.*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	IT OL-8-A-Self Assessment	Conducts thorough, regular self-assessment congruent with current job responsibilities and future aspirations	Completes regular self-assessment congruent with current job responsibilities.	Completes at least one self-assessment annually congruent with current job responsibilities but does not consider any potential future aspirations	Completes minimal self-assessment that only provides generic information and does not apply to current responsibilities or future aspirations.	Does not participate in any form of self-assessment
	IT OL-8-B-Personal Learning Plan	Develops a detailed personal learning plan that leads to both improvements in current performance and future advancement. Makes judicious choices of quality formal and informal resources	Develops a personal learning plan that leads to both improvements in current performance and future advancement. Makes choices of useful formal and informal resources	Develops a personal learning plan that leads to improvements in current performance.	Develops a generic personal learning plan that may not provide improvements in current performance.	Does not create a personal learning plan.
	IT OL-8-C-Professional Development Activities	Participates in mulitple professional development activities needed for present responsibilities. Regularly monitors developments that impact the profession and seeks out opportunities to close competency gaps and improve knowledge and skills.	Participates in professional development activities needed for present responsibilities. Occasionally monitors developments that impact the profession and seeks improve knowledge and skills.	Participates in minimal professional development activities needed for present responsibilities. Occasionally monitors developments that impact the profession but does not seek to close competency gaps.	Participates in at least one professional development activitiy however the activity is not directly needed for present responsibilities.	Does not participate in any form of professional develpoment

ORU MASTER OUTCOME RUBRIC

Academic Department: *Computing & Mathematics*

Program Name: (Major, Major/Concentration) *Information Technology Online*

Program Outcome Number: *9*

Program Outcome Description: *Use current techniques, skills, and tools necessary for computing practice.*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	IT OL-9-A-Creativity in Use of Techniques, Skills, and Tools	Student provides a creative approach and a fully functional solution to problem	Student provides a fully functional solution to problem using standard techniques, skills, and/or tools	Student provides a workable solution to problem using techniques, skills, and/or tools.	Student is unable to provide useful techniques, skills, and/or tools	Not attempted
	IT OL-9-B-Depth of use of techniques, Skills, and Tools	Students are able to use multiple, advanced techniques, skills, and/or tools.	Students are able to use appropriate and effective techniques, skills, and/or tools.	Students are able to use simple techniques, skills, and/or tools.	Students are unable to use simple techniques, skills, and/or tools.	Not attempted
	IT OL-9-C-Effective use of techniques, skills, and tools	Can efficiently identify, implement, provide solutions for fairly complex cases using current techniques, skills, and/or tools.	Can identify, implement, provide solutions for reasonably complex cases using current techniques, skills, and/or tools.	Can identify, implement, provide solutions for simple cases using current techniques, skills, and/or tools.	Cannot identify, implement, or use techniques, skills, and/or tools effectively.	Not attempted

ORU MASTER OUTCOME RUBRIC

Academic Department: *Computing & Mathematics*

Program Name: (Major, Major/Concentration) *Information Technology Online*

Program Outcome Number: 10

Program Outcome Description: *Use and apply current technical concepts and practices in the core information technologies*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	IT OL-10-A-Applying current practices in the core computing technologies	Correctly and efficiently incorporates the applicable technical practice possibilities to the challenge	Correctly identifies the applicable technical practices to the challenge.	Can recognize whether a technical practice may apply.	Is unclear on how to connect technical practices to the challenge.	Not attempted
	IT OL-10-B-Applying current technical concepts	Formally characterizes the nature of the developed project/effort with the attributes of current technical concepts.	Utilizes the nature of current technical concepts in the project	Is somewhat guided by current technical concepts in the project.	Shows little regard to applying current technical concepts to the effort.	Not attempted
	IT-10-C-Use and recognition of technical concepts and practices in the core information technologies	Can explain in detail the rationale for the chosen current concept/practice in comparison to other options.	Identifies and applies an appropriate current concept/practice with reasonable analysis for its choice.	Demonstrates an awareness of a current concept/practice that is appropriate to the problem.	Demonstrates little if any knowledge of appropriate current concept/practice.	Not attempted

ORU MASTER OUTCOME RUBRIC

Academic Department: *Computing & Mathematics*

Program Name: (Major, Major/Concentration) *Information Technology Online*

Program Outcome Number: *11*

Program Outcome Description: *Identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	IT OL-11-A-Requirements Capture	Effectively captures all the product requirements and integrates user inputs and maps design elements to each.	Captures requirements from both the product and user perspectives but doesn't provide a requirements coverage implementation map.	Demonstrates the need for capturing the requirements.	Gives little regard to the process of effectively capturing product and user requirements and provides little to now evidence of deterministically mapping implementation to the requirements.	Not attempted

ORU MASTER OUTCOME RUBRIC

Academic Department: *Computing & Mathematics*

Program Name: (Major, Major/Concentration) *Information Technology Online*

Program Outcome Number: *12*

Program Outcome Description: *Effectively integrate IT-based solutions into the user environment.*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	IT OL-12-A-Solution Design	Student is able to develop multiple requirements specifications,and estimate behavior of possible solutions	Student is able to develop complete hardware and software requirements specifications.	Student is able to develop simple hardware and software requirements specifications.	Student is unable to develop simple hardware and software requirements specifications.	Not attempted
	IT OL-12-B-Implementation Design	Student provides a creative design approach and a fully functional solution to problem	Student provides a fully functional solution to problem using standard design principles	Student provides a workable solution to problem	Student is unable to provide a working design	Not attempted

ORU MASTER OUTCOME RUBRIC

Academic Department: *Computing & Mathematics*

Program Name: (Major, Major/Concentration) *Information Technology Online*

Program Outcome Number: 13

Program Outcome Description: *Understanding the best practices and standards and their application*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	IT OL-13-A-Applying Standards where appropriate	Formally characterizes the nature of the developed product with the attributes of the applied standards and/or theory.	Utilizes the nature of computer information technology standards in the development of the product	Is somewhat guided by the computer information technology standards in the project development.	Shows little regard to applying computer information technology standards to the project development effort.	Not attempted
	IT OL-13-B-Best Practices with Tools and Environments	Articulates, documents and analyzes the expected benefits for applying the applicable best practices/methods.	Demonstrates awareness of the anticipated benefits for the applicable best practices/methods.	Bases the project development on a limited use of best practices.	Does not show obvious consideration of using best practices	Not attempted

ORU MASTER OUTCOME RUBRIC

Academic Department: *Computing & Mathematics*

Program Name: (Major, Major/Concentration) *Information Technology Online*

Program Outcome Number: *14*

Program Outcome Description: *Assist in the creation of an effective project plan.*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	IT OL-14-A-Project Plan Details	Plan provides a precise amount of details about the project goal, scope, deliverables, milestones, and risks.	Plan lists all the project goal, scope, deliverables, milestones, and risks.	Plan lists most of the project goal, scope, deliverables, milestones, and risks.	Plan is missing significant information related to the project goal, scope, deliverables, milestones, and/or risks.	Only includes general statements that lack details to assure mutual understanding of project direction.
	IT OL-14-B-Requirements Capture	Effectively captures all the project/product requirements and integrates user inputs and maps design elements to each.	Captures requirements from both the product and user perspectives but doesn't provide a requirements coverage implementation map.	Demonstrates the need for capturing the requirements.	Gives little regard to the process of effectively capturing product and user requirements and provides little to no evidence of deterministically mapping implementation to the requirements.	Not attempted

ORU MASTER OUTCOME RUBRIC

Academic Department: *Computing & Mathematics*

Program Name: (Major, Major/Concentration) *Information Technology Online*

Program Outcome Number: *15*

Program Outcome Description: *Solve real world problems informed by a Christian worldview*

	Criterion Description/Name	Level 4 Description	Level 3 Description	Level 2 Description	Level 1 Description	Level 0 Description
	IT OL-15-A-Knowledge of religious codes of ethics from a Christian worldview	Demonstrates a thorough knowledge of different ethical perspectives and concepts derived from a Chriatian worldview	Demonstrates adequate knowledge of different ethical perspectives and concepts derived from a Christian worldview	Demonstrates limited knowledge of different ethical perspectives and concepts derived from a Christian worldview	Demonstrates an incorrect or only a superficial knowledge of different ethical perspectives and concepts derived from a Christian worldview	Not attempted

	IT OL-15-B-Analysis of ethical dilemma from a Christian worldview	Analyzes an ethical dilemma thoroughly and insightfully, examining consequences from a Christian worldview	Analyzes an ethical dilemma thoroughly, examining consequences from a Christian worldview	Analyzes appropriately an ethical dilemma, examining consequences from a Christian worldview	Analyzes inappropriately an ethical dilemma and does not examine consequences from a Christian worldview	Not attempted

WPA-MAT-Master Rubric

Course: ORU Online

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MAT-1-A-Problem Identification	4 points States problem and all necessary information clearly and accurately	3 points States problem and most necessary information clearly and accurately	2 points States problem and some necessary information clearly and accurately	1 point States problem and some necessary information or stated unclearly and inaccurately or irrelevant information	0 points Does not state problem or any necessary information	/ 4
MAT-1-B-Assumptions	4 points Presents and justifies critical and consistent assumptions	3 points Presents and justifies consistent assumptions	2 points Presents consistent assumptions	1 point Presents extraneous and/or contradictory assumptions	0 points Presents no assumptions	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MAT-1-C-Reasoning	4 points Identifies significant and realistic implications and consequences of reasoning, and draws clear and valid conclusions or inferences supported by content	3 points Identifies realistic implications and consequences of reasoning, and draws valid conclusions or inferences supported by content	2 points Identifies some implications and consequences of reasoning, and draws valid conclusions or inferences	1 point Identifies insignificant or unrealistic implications and consequences of reasoning, and draws inaccurate conclusions or inferences	0 points Identifies no implications or consequences of reasoning, and draws no conclusions or inferences	/ 4
MAT-1-D-Modeling	4 points Identifies significant and realistic features of a situation or model, and draws clear and valid conclusions or inferences supported by content	3 points Identifies realistic features of a situation or model, and draws valid conclusions or inferences supported by content	2 points Identifies some realistic features of a situation or model, and draws valid conclusions or inferences	1 point Identifies insignificant and/or unrealistic features of a situation or model, or draws inaccurate conclusions or inferences	0 points Identifies no model and/or draws no conclusions or inferences	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MAT-1-E-General Principles	4 points Effectively and consistently applies strategies to particular instances and correctly deduces appropriate general principles	3 points Applies strategies to particular instances and correctly deduces an appropriate general principle	2 points Applies strategies to particular instances and correctly deduces a generalization	1 point Applies strategies incorrectly to particular instances and/or deduces incorrect general principles	0 points Does not apply any strategy to particular instances or deduce any general principles	/ 4
MAT-1-F-Use of Mathematical Representations	4 points Consistently, correctly, and effectively uses multiple representations to model and describe mathematics	3 points Correctly and effectively uses multiple representations to model and describe mathematics	2 points Correctly uses multiple representations to model and describe mathematics	1 point Incorrectly uses multiple representations to model and describe mathematics	0 points Does not use multiple representations to model and describe mathematics	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MAT-1-G-Comparison of Mathematical Representations	4 points Consistently, correctly, and effectively compares multiple representations to model and describe mathematics	3 points Correctly and effectively compares multiple representations to model and describe mathematics	2 points Correctly compares multiple representations to model and describe mathematics	1 point Incorrectly compares multiple representations to model and describe mathematics	0 points Does not compare multiple representations to model and describe mathematics	/ 4
MAT-1-H-Assess Solutions	4 points Effectively explores and creates useful examples or approaches and correctly assesses all solutions discussed	3 points Explores and/or creates useful examples or approaches and correctly assesses some solutions discussed	2 points Explores or creates some examples and/or correctly assesses a solution	1 point Explores irrelevant directions or approaches and incorrectly assesses solutions	0 points Does not explore new directions or approaches and does not assess solutions	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MAT-1-I-Make Mathematical Arguments	4 points Effectively presents clearly and accurately a mathematically rigorous argument	3 points Presents an accurate and rigorous mathematical argument	2 points Presents a mathematically rigorous argument with only a few errors	1 point Presents an incorrect mathematical argument that is not rigorous	0 points Does not present a mathematically rigorous argument	/ 4
MAT-1-J-Mathematical Generalizations	4 points Effectively applies strategies in solving problems and formulates and tests conjectures in order to frame appropriate generalizations	3 points Applies correct strategies in solving problems and formulates and tests conjectures toward a generalization	2 points Applies some strategies in solving problems and formulates and tests a conjecture	1 point Mathematical experiments performed incorrectly or tests conjectures incorrectly	0 points Does not carry out experiments, or devise or test conjectures	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MAT-2-A-Real-world Based Mathematical Models	4 points Clearly and purposefully formulates, represents, analyzes, interprets, and validates mathematical models derived from real-world problems consistently with no errors	3 points Represents, analyzes, interprets, and validates mathematical models derived from real-world problems consistently with no errors	2 points Represents, analyzes, interprets, and validates mathematical models derived from real-world problems consistently with few errors	1 point Incorrectly formulates, represents, analyzes, and/or interprets mathematical models derived from real-world problems	0 points Does not attempt to make any connections to other areas	/ 4
MAT-2-B-Model Flexibility	4 points Demonstrates excellent flexibility in mathematical modeling when confronted with different purposes or contexts	3 points Demonstrates flexibility in mathematical modeling when confronted with different purposes or contexts	2 points Demonstrates some flexibility in mathematical modeling when confronted with different purposes or contexts	1 point Demonstrates no flexibility in mathematical modeling when confronted with different purposes or contexts	0 points Does not attempt to make any connections to other areas	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MAT-2-C-Model Interconnectivity	4 points Demonstrates excellent interconnectedness of mathematical ideas and how they build on one another	3 points Demonstrates interconnectedness of mathematical ideas and how they build on one another	2 points Demonstrates some interconnectedness of mathematical ideas and how they build on one another	1 point The student inappropriately or inaccurately demonstrates interconnectedness of mathematical ideas and how they build on one another.	0 points Does not demonstrate interconnectedness of mathematical ideas and how they build on one another	/ 4
MAT-2-D-Mathematical Ideas	4 points Clearly and purposefully recognizes and applies mathematical connections among mathematical ideas and across various content areas and real-world contexts	3 points Recognizes and applies mathematical connections among mathematical ideas and across various content areas and real-world contexts	2 points Recognizes and applies a mathematical connection among mathematical ideas and across various content areas and real-world contexts	1 point Inappropriately or inaccurately recognizes or applies mathematical connections among mathematical ideas and across various content areas and real-world contexts	0 points The student does not recognizes any mathematical connections among mathematical ideas and across various content areas and real-world contexts.	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MAT-2-E-Model Linkages	4 points Develops opportunities to create linkages of mathematical ideas in various contexts	3 points Promotes linkages of mathematical ideas in various contexts	2 points Seeks opportunities to promote linkages of mathematical ideas in various contexts	1 point Inappropriately or inaccurately promotes linkages of mathematical ideas in various contexts	0 points Does not promote linkages of mathematical ideas in various contexts	/ 4
MAT-3-A-Understanding Math Technologies	4 points Consistently discusses clear, insightful, and accurate connections between math content and results of computer exercises	3 points Usually discusses insightful and accurate connections between math content and results of computer exercises	2 points Discusses some accurate connections between math content and results of computer exercises	1 point Discusses inaccurate connections between the math content and the results of the computer exercises	0 points Did not attempt to discuss connections between math content and computer exercises	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MAT-3-B-Using Math Technologies	4 points Consistently uses technology appropriately, efficiently, and accurately to solve problems	3 points Consistently uses technology appropriately and accurately to solve problems	2 points Uses technology appropriately and accurately to solve problems	1 point Uses technology ineffectively and inaccurately to solve problems	0 points Does not use technology as a tool to solve problems	/ 4
MAT-3-C-Mathematical Knowledge	4 points Demonstrates thorough knowledge of math content throughout entire assignment	3 points Demonstrates sufficient knowledge of math content throughout most of the assignment	2 points Demonstrates some knowledge of math content throughout most of the assignment	1 point Demonstrates inadequate knowledge of math content	0 points Not attempted	/ 4
MAT-3-D-Use of Syntax	4 points Demonstrates appropriate use of syntax with no errors	3 points Demonstrates appropriate use of syntax with a few minor errors	2 points Demonstrates mostly appropriate use of syntax with no major errors	1 point Demonstrates inappropriate use of syntax with errors	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MAT-3-E-Use of Software	4 points Consistently demonstrates appropriate, efficient, and accurately sequenced use of software	3 points Usually demonstrates appropriate, efficient, and accurately sequenced use of software	2 points Demonstrates some appropriate and accurately sequenced use of software	1 point Demonstrates inappropriate, inefficient, and/or inaccurately sequenced use of software	0 points Did not attempt to use software	/ 4
MAT-3-F-Project Functionality	4 points Works above and beyond expectations	3 points All aspects working correctly	2 points Most aspects work correctly	1 point Not working or minimally functional	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MAT-4-A-Abstract Reasoning	4 points Consistently demonstrates ability to reason abstractly and reflectively, constructing viable arguments and correctly critiquing reasoning of others throughout entire assignment	3 points Demonstrates ability to reason abstractly and reflectively, constructing viable arguments and critiquing reasoning of others throughout most of assignment	2 points Demonstrates some ability to reason abstractly and reflectively, constructing viable arguments and critiquing reasoning of others throughout most of assignment	1 point Demonstrates inadequate ability to reason abstractly and reflectively, construct viable arguments and/or critique reasoning of others	0 points Not attempted	/ 4
MAT-4-B-Proving Mathematical Statements	4 points Understands how to prove mathematical statements and makes very few mistakes	3 points Understands how to prove mathematical statements but makes a few mistakes	2 points Understands how to prove mathematical statements but makes some mistakes	1 point Does not understand how to prove mathematical statements	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MAT-5-A-Mathematical Understanding	4 points Subject Area/Major GPA between 3.5 – 4.0	3 points Subject Area/Major GPA between 3.0 – 3.49	2 points Subject Area/Major GPA between 2.5 – 2.99	1 point Subject Area/Major GPA below 2.5	0 points Not attempted	/ 4
MAT-5-B-Mathematical Temperament	4 points Overall score on disposition form(s) between 3.5 – 4.0	3 points Overall score on disposition form(s) between 3.0 – 3.49	2 points Overall score on disposition form(s) between 2.0 – 2.99	1 point Overall score on disposition form(s) below 2.0	0 points Not attempted	/ 4
MAT-5-C-Senior Paper Quality	4 points Thesis clearly stated and developed; specific examples appropriate and clearly develop thesis; conclusion clear; flows together well; good transitions; succinct but not choppy; well organized	3 points Most information presented in logical sequence; generally very well organized but better transitions from idea to idea and medium to medium needed	2 points Concept and ideas loosely connected; lacks clear transitions; flow and organization choppy	1 point Presentation choppy and disjointed; does not flow; development of thesis vague; no apparent logical order of presentation	0 points Not attempted	/ 4

Total	/ 104

Overall Score

Level 4	Level 3	Level 2	Level 1	Level 0
22 points minimum	14 points minimum	8 points minimum	4 points minimum	0 points minimum

WPA-MPA-Master Rubric

Course: ORU Online

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MPA-1-A-Problem Identification	4 points States problem and all necessary information clearly and accurately	3 points States problem and most necessary information clearly and accurately	2 points States problem and some necessary information clearly and accurately	1 point States problem and some necessary information or stated unclearly and inaccurately or irrelevant information	0 points Does not state problem or any necessary information	/ 4
MPA-1-B-Assumptions	4 points Presents and justifies critical and consistent assumptions	3 points Presents and justifies consistent assumptions	2 points Presents consistent assumptions	1 point Presents extraneous and/or contradictory assumptions	0 points Presents no assumptions	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MPA-1-C-Reasoning	4 points Identifies significant and realistic implications and consequences of reasoning, and draws clear and valid conclusions or inferences supported by content	3 points Identifies realistic implications and consequences of reasoning, and draws valid conclusions or inferences supported by content	2 points Identifies some implications and consequences of reasoning, and draws valid conclusions or inferences	1 point Identifies insignificant or unrealistic implications and consequences of reasoning, and draws inaccurate conclusions or inferences	0 points Identifies no implications or consequences of reasoning, and draws no conclusions or inferences	/ 4
MPA-1-D-Modeling	4 points Identifies significant and realistic features of a situation or model, and draws clear and valid conclusions or inferences supported by content	3 points Identifies realistic features of a situation or model, and draws valid conclusions or inferences supported by content	2 points Identifies some realistic features of a situation or model, and draws valid conclusions or inferences	1 point Identifies insignificant and/or unrealistic features of a situation or model, or draws inaccurate conclusions or inferences	0 points Identifies no model and/or draws no conclusions or inferences	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MPA-1-E-General Principles	4 points Effectively and consistently applies strategies to particular instances and correctly deduces appropriate general principles	3 points Applies strategies to particular instances and correctly deduces an appropriate general principle	2 points Applies strategies to particular instances and correctly deduces a generalization	1 point Applies strategies incorrectly to particular instances and/or deduces incorrect general principles	0 points Does not apply any strategy to particular instances or deduce any general principles	/ 4
MPA-1-F-Use of Mathematical Representations	4 points Consistently, correctly, and effectively uses multiple representations to model and describe mathematics	3 points Correctly and effectively uses multiple representations to model and describe mathematics	2 points Correctly uses multiple representations to model and describe mathematics	1 point Incorrectly uses multiple representations to model and describe mathematics	0 points Does not use multiple representations to model and describe mathematics	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MPA-1-G-Comparison of Mathematical Representations	4 points Consistently, correctly, and effectively compares multiple representations to model and describe mathematics	3 points Correctly and effectively compares multiple representations to model and describe mathematics	2 points Correctly compares multiple representations to model and describe mathematics	1 point Incorrectly compares multiple representations to model and describe mathematics	0 points Does not compare multiple representations to model and describe mathematics	/ 4
MPA-1-H-Assess Solutions	4 points Effectively explores and creates useful examples or approaches and correctly assesses all solutions discussed	3 points Explores and/or creates useful examples or approaches and correctly assesses some solutions discussed	2 points Explores or creates some examples and/or correctly assesses a solution	1 point Explores irrelevant directions or approaches and incorrectly assesses solutions	0 points Does not explore new directions or approaches and does not assess solutions	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MPA-1-I-Make Mathematical Arguments	4 points Effectively presents clearly and accurately a mathematically rigorous argument	3 points Presents an accurate and rigorous mathematical argument	2 points Presents a mathematically rigorous argument with only a few errors	1 point Presents an incorrect mathematical argument that is not rigorous	0 points Does not present a mathematically rigorous argument	/ 4
MPA-1-J-Mathematical Generalizations	4 points Effectively applies strategies in solving problems and formulates and tests conjectures in order to frame appropriate generalizations	3 points Applies correct strategies in solving problems and formulates and tests conjectures toward a generalization	2 points Applies some strategies in solving problems and formulates and tests a conjecture	1 point Mathematical experiments performed incorrectly or tests conjectures incorrectly	0 points Does not carry out experiments, or devise or test conjectures	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MPA-2-A-Real-world Based Mathematical Models	4 points Clearly and purposefully formulates, represents, analyzes, interprets, and validates mathematical models derived from real-world problems consistently with no errors	3 points Represents, analyzes, interprets, and validates mathematical models derived from real-world problems consistently with no errors	2 points Represents, analyzes, interprets, and validates mathematical models derived from real-world problems consistently with few errors	1 point Incorrectly formulates, represents, analyzes, and/or interprets mathematical models derived from real-world problems	0 points Does not attempt to make any connections to other areas	/ 4
MPA-2-B-Model Flexibility	4 points Demonstrates excellent flexibility in mathematical modeling when confronted with different purposes or contexts	3 points Demonstrates flexibility in mathematical modeling when confronted with different purposes or contexts	2 points Demonstrates some flexibility in mathematical modeling when confronted with different purposes or contexts	1 point Demonstrates no flexibility in mathematical modeling when confronted with different purposes or contexts	0 points Does not attempt to make any connections to other areas	/ 4

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Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MPA-2-C-Model Interconnectivity	4 points Demonstrates excellent interconnectedness of mathematical ideas and how they build on one another	3 points Demonstrates interconnectedness of mathematical ideas and how they build on one another	2 points Demonstrates some interconnectedness of mathematical ideas and how they build on one another	1 point The student inappropriately or inaccurately demonstrates interconnectedness of mathematical ideas and how they build on one another.	0 points Does not demonstrate interconnectedness of mathematical ideas and how they build on one another	/ 4
MPA-2-D-Mathematical Ideas	4 points Clearly and purposefully recognizes and applies mathematical connections among mathematical ideas and across various content areas and real-world contexts	3 points Recognizes and applies mathematical connections among mathematical ideas and across various content areas and real-world contexts	2 points Recognizes and applies a mathematical connection among mathematical ideas and across various content areas and real-world contexts	1 point Inappropriately or inaccurately recognizes or applies mathematical connections among mathematical ideas and across various content areas and real-world contexts	0 points The student does not recognizes any mathematical connections among mathematical ideas and across various content areas and real-world contexts.	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MPA-2-E-Model Linkages	4 points Develops opportunities to create linkages of mathematical ideas in various contexts	3 points Promotes linkages of mathematical ideas in various contexts	2 points Seeks opportunities to promote linkages of mathematical ideas in various contexts	1 point Inappropriately or inaccurately promotes linkages of mathematical ideas in various contexts	0 points Does not promote linkages of mathematical ideas in various contexts	/ 4
MPA-3-A-Understanding Math Technologies	4 points Consistently discusses clear, insightful, and accurate connections between math content and results of computer exercises	3 points Usually discusses insightful and accurate connections between math content and results of computer exercises	2 points Discusses some accurate connections between math content and results of computer exercises	1 point Discusses inaccurate connections between the math content and the results of the computer exercises	0 points Did not attempt to discuss connections between math content and computer exercises	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MPA-3-B-Using Math Technologies	4 points Consistently uses technology appropriately, efficiently, and accurately to solve problems	3 points Consistently uses technology appropriately and accurately to solve problems	2 points Uses technology appropriately and accurately to solve problems	1 point Uses technology ineffectively and inaccurately to solve problems	0 points Does not use technology as a tool to solve problems	/ 4
MPA-3-C-Mathematical Knowledge	4 points Demonstrates thorough knowledge of math content throughout entire assignment	3 points Demonstrates sufficient knowledge of math content throughout most of the assignment	2 points Demonstrates some knowledge of math content throughout most of the assignment	1 point Demonstrates inadequate knowledge of math content	0 points Not attempted	/ 4
MPA-3-D-Use of Syntax	4 points Demonstrates appropriate use of syntax with no errors	3 points Demonstrates appropriate use of syntax with a few minor errors	2 points Demonstrates mostly appropriate use of syntax with no major errors	1 point Demonstrates inappropriate use of syntax with errors	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MPA-3-E-Use of Software	4 points Consistently demonstrates appropriate, efficient, and accurately sequenced use of software	3 points Usually demonstrates appropriate, efficient, and accurately sequenced use of software	2 points Demonstrates some appropriate and accurately sequenced use of software	1 point Demonstrates inappropriate, inefficient, and/or inaccurately sequenced use of software	0 points Did not attempt to use software	/ 4
MPA-3-F-Project Functionality	4 points Works above and beyond expectations	3 points All aspects working correctly	2 points Most aspects work correctly	1 point Not working or minimally functional	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MPA-4-A-Abstract Reasoning	4 points Consistently demonstrates ability to reason abstractly and reflectively, constructing viable arguments and correctly critiquing reasoning of others throughout entire assignment	3 points Demonstrates ability to reason abstractly and reflectively, constructing viable arguments and critiquing reasoning of others throughout most of assignment	2 points Demonstrates some ability to reason abstractly and reflectively, constructing viable arguments and critiquing reasoning of others throughout most of assignment	1 point Demonstrates inadequate ability to reason abstractly and reflectively, construct viable arguments and/or critique reasoning of others	0 points Not attempted	/ 4
MPA-4-B-Proving Mathematical Statements	4 points Understands how to prove mathematical statements and makes very few mistakes	3 points Understands how to prove mathematical statements but makes a few mistakes	2 points Understands how to prove mathematical statements but makes some mistakes	1 point Does not understand how to prove mathematical statements	0 points Not attempted	/ 4

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MPA-5-A- Mathematical Understanding	4 points

Subject Area/Major GPA between 3.5 – 4.0 | 3 points

Subject Area/Major GPA between 3.0 – 3.49 | 2 points

Subject Area/Major GPA between 2.5 – 2.99 | 1 point

Subject Area/Major GPA below 2.5 | 0 points

Not attempted | / 4 |
| MPA-5-B- Mathematical Temperament | 4 points

Overall score on disposition form(s) between 3.5 – 4.0 | 3 points

Overall score on disposition form(s) between 3.0 – 3.49 | 2 points

Overall score on disposition form(s) between 2.0 – 2.99 | 1 point

Overall score on disposition form(s) below 2.0 | 0 points

Not attempted | / 4 |
| MPA-5-C- Senior Paper Quality | 4 points

Thesis clearly stated and developed; specific examples appropriate and clearly develop thesis; conclusion clear; flows together well; good transitions; succinct but not choppy; well organized | 3 points

Most information presented in logical sequence; generally very well organized but better transitions from idea to idea and medium to medium needed | 2 points

Concept and ideas loosely connected; lacks clear transitions; flow and organization choppy | 1 point

Presentation choppy and disjointed; does not flow; development of thesis vague; no apparent logical order of presentation | 0 points

Not attempted | / 4 |

Criteria	Level 4	Level 3	Level 2	Level 1	Level 0	Criterion Score
MPA-6-A-Business MFT Exam	4 points Scored minimum of 80th percentile	3 points Scored 60th-79th percentile	2 points Scored 40th-59th percentile	1 point Scored 20th-39th percentile	0 points Scored less than 20th percentile	/ 4

Total	/ 108

Overall Score

Level 4	Level 3	Level 2	Level 1	Level 0
22 points minimum	14 points minimum	8 points minimum	4 points minimum	0 points minimum