

Title 7: Education K-12  
Part 55: Education and Training, Career Pathway  
**2014 Teacher Academy**  
Mississippi Department of Education



Program CIP: 13.0101Education, General

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Published by

Office of Career and Technical Education  
Mississippi Department of Education  
Jackson, MS 39205

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Mississippi State, MS 39762

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The Research and Curriculum Unit (RCU), located in Starkville, MS, as part of Mississippi State University, was established to foster educational enhancements and innovations. In keeping with the land grant mission of Mississippi State University, the RCU is dedicated to improving the quality of life for Mississippians. The RCU enhances intellectual and professional development of Mississippi students and educators while applying knowledge and educational research to the lives of the people of the state. The RCU works within the contexts of curriculum development and revision, research, assessment, professional development, and industrial training.

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# Acknowledgments

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The Teacher Academy curriculum was presented to the Mississippi Board of Education on March 20, 2014. The following persons were serving on the state board at the time:

Dr. Carey M. Wright, State Superintendent of Education  
Dr. O. Wayne Gann, Chair  
Mr. Howell “Hal” N. Gage, Vice Chair  
Ms. Kami Bumgarner  
Mr. William Harold Jones  
Dr. John R. Kelly  
Mr. Charles McClelland  
Mr. Richard Morrison  
Mrs. Rosemary G. Aultman  
Mr. Simon F. Weir II

Jean Massey, Associate Superintendent of Education for the Office of Career and Technical Education at the Mississippi Department of Education, assembled a taskforce committee to provide input throughout the development of the *Teacher Academy Curriculum Framework and Supporting Materials*.

LeAnn G. Miller, Instructional Design Specialist for the Research and Curriculum Unit at Mississippi State University researched and authored this framework. [leann.miller@rcu.msstate.edu](mailto:leann.miller@rcu.msstate.edu)

Also, special thanks are extended to the teachers who contributed teaching and assessment materials that are included in the framework and supporting materials:

Amy Baughman, Carl Lofton Vo-Tech Center, Marion County  
Joan Easterling, Covington County Vocational Center, Covington County  
Gena Heffner, Jackson County Vocational Center, Jackson County  
Bethany Lucas, Philadelphia/Neshoba County CTC, Neshoba County  
Robin McMichael, Wayne County Vocational Complex, Wayne County  
Stephanie Peets, Madison Career & Technical Center, Madison  
Jennifer Williams, Cleveland Career Development & Technology Center, Cleveland

Appreciation is expressed to the following professional, who provided guidance and insight throughout the development process:

Nicki Reeves, Program Coordinator – Education and Training, Office of Career and Technical Education and Workforce Development, Mississippi Department of Education, Jackson, MS

# Standards

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Standards are superscripted in each unit and are referenced in the appendices. Standards in the *Teacher Academy Curriculum Framework and Supporting Materials* are based on the following:

## **National Board for Professional Teaching Standards**

The National Board Standards define the specific knowledge and expertise that teachers in different subject areas and developmental levels use to frame their practice. The National Board developed standards for accomplished teaching in 16 different subject areas with students at various developmental levels. These standards were developed and validated by representative committees comprised of master teachers, disciplinary organizations and other education experts. Copyright & Permissions © 2009 National Board for Professional Teaching Standards. All rights reserved. NBPTS, NBCT, National Board for Professional Teaching Standards, National Board Certified Teacher, National Board Certification are registered trademarks or service marks of the National Board for Professional Teaching Standards. Other marks are trademarks or registered trademarks of their respective organizations [www.nbpts.org/national-board-standards](http://www.nbpts.org/national-board-standards)

## **Common Core State Standards Initiative**

The Common Core State Standards provide a consistent, clear understanding of what students are expected to learn, so teachers and parents know what they need to do to help them. The standards are designed to be robust and relevant to the real world, reflecting the knowledge and skills that our young people need for success in college and careers. With American students fully prepared for the future, our communities will be best positioned to compete successfully in the global economy. Copyright 2010. National Governors Association Center for Best Practices and Council of Chief State School Officers. All rights reserved. States and territories of the United States as well as the District of Columbia that have adopted the Common Core State Standards in whole are exempt from this provision, and no attribution to the National Governors Association Center for Best Practices and Council of Chief State School Officers is required. Reprinted from <http://www.corestandards.org/>.

## **National Educational Technology Standards for Students**

Reprinted with permission from *National Educational Technology Standards for Students: Connecting Curriculum and Technology*, Copyright 2007, International Society for Technology in Education (ISTE), 800.336.5191 (U.S. and Canada) or 541.302.3777 (International), [iste@iste.org](mailto:iste@iste.org), [www.iste.org](http://www.iste.org). All rights reserved. Permission does not constitute an endorsement by ISTE.

## **21st Century Skills and Information and Communication Technologies Literacy Standards**

In defining 21<sup>st</sup>-century learning, the Partnership for 21st Century Skills has embraced five content and skill areas that represent the essential knowledge for the 21st century: global awareness; civic engagement; financial, economic, and business literacy; learning skills that encompass problem-solving, critical-thinking, and self-directional skills; and information and communication technology (ICT) literacy.

# Preface

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Secondary career and technical education programs in Mississippi face many challenges resulting from sweeping educational reforms at the national and state levels. Schools and teachers are increasingly being held accountable for providing true learning activities to every student in the classroom. This accountability is measured through increased requirements for mastery and attainment of competency as documented through both formative and summative assessments.

The courses in this document reflect the statutory requirements as found in Section 37-3-49, *Mississippi Code of 1972*, as amended (Section 37-3-46). In addition, this curriculum reflects guidelines imposed by federal and state mandates (Laws, 1988, Ch. 487, §14; Laws, 1991, Ch. 423, §1; Laws, 1992, Ch. 519, §4 eff. from and after July 1, 1992; Carl D. Perkins Vocational Education Act IV, 2007; and No Child Left Behind Act of 2001).

# Mississippi Teacher Professional Resources

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The following are resources for Mississippi teachers.

Curriculum, Assessment, Professional Learning, and other program resources can be found at The Research and Curriculum Unit's website: <http://www.rcu.msstate.edu>

Learning Management System: An online resource

Learning Management System information can be found at the RCU's website under Professional Learning.

Should you need additional instructions, please call 662.325.2510.

My PLC: An online registration for all professional-development sessions

To register for any session, teachers will need an account in the registration system, MyPLC, <https://myplc.rcu.msstate.edu>. To create an account, click on the link and navigate to the "Request a Guest ID" link. The ID should be the teacher's first initial and last name and the last four (4) digits of the social security number. Teachers should complete the entire form, which will then be sent to a secure server. Upon activation of the teacher's account, he or she will receive an e-mail with login instructions. The teacher may then browse for the available sessions and register for the desired courses.

Should you need additional instructions, please call 662.325.2510.

# Executive Summary

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## **Pathway Description**

Teacher Academy is a pathway for students in the Education and Training career cluster. The Teacher Academy program is a high school program with courses designed to attract students to the field of education, to provide information and field experiences relevant to pursuing a degree in education, and to prepare students for the rigors of a career in education so they will remain long-term educators. The Teacher Academy pathway includes classroom and hands-on experiences that will prepare students for employment or continuing education in the education field.

## **Industry Certification**

Industry standards in the *Teacher Academy Curriculum Framework and Supporting Materials* are based on the following:

### **National Board Professional Teaching Standards and the PRAXIS Standards**

These standards advance the quality of teaching and learning by:

- Maintaining high and rigorous standards for what accomplished teachers should know and be able to do;
- Providing a national voluntary system certifying teachers who meet these standards; and
- Advocating related education reform to integrate National Board Certification in American education and to capitalize on the expertise of National Board Certified Teachers.

These standards are based on five proposition areas: teachers are committed to students and learning, teachers know the subjects they teach and how to teach those subjects to students,



teachers are responsible for managing and monitoring student learning, teachers think systematically about their practice and learn from experience, and teachers are members of learning communities.

### **Assessment**

The latest assessment blueprint for the curriculum can be found at <http://www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx>

### **Student Prerequisites**

In order for students to experience success in the program, the following student prerequisites are suggested:

1. C or higher in English (the previous year)
2. C or higher in Math (last course taken or the instructor can specify the math)
3. Instructor Approval and TABE Reading Score (eighth grade or higher)

**or**

1. TABE Reading Score (eighth grade or higher)
2. Instructor Approval

**or**

1. Instructor Approval

### **Academic Credit**

The latest academic credit information can be found at <https://www.rcu.msstate.edu/MDE/PathwaystoSuccess.aspx>. Once there, click the “*Counselor Resources*” Tab, then click “*Curriculum Enhancement List.*” Check this site often as it is updated frequently.

## **Teacher Licensure**

The latest teacher licensure information can be found at

<http://www.mde.k12.ms.us/educator-licensure>

## **Professional Learning**

If you have specific questions about the content of any of training sessions provided, please contact the Research and Curriculum Unit at 662.325.2510.

# Course Outlines

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## **Option 1—Four One-Carnegie-Unit Courses**

This curriculum consists of four one-credit courses, which should be completed in the following sequence:

- 1. Foundations of an Educator – Course Code: 996302**
- 2. Practices of an Educator – Course Code: 996303**
- 3. Exploring Diversity in Instruction – Course Code: 996304**
- 4. Progressive Practices of Teacher Academy – Course Code: 996305**

### **Course Description: Foundations of an Educator**

The *Foundations of an Educator* course provides students with the opportunity to gain foundational skills needed to enhance them as learners, future educators, and communicators. Students receive history, theory, and professionalism needed to understand the educational system. Students should have the opportunity to observe skills learned in class at various educational settings (one Carnegie unit).

### **Course Description: Practices of an Educator**

The *Practices of an Educator* course provides students with the opportunity to gain knowledge and practice needed to enhance themselves as future educators. Students receive practice in communication skills, planning, teaching, and assessment strategies needed to understand the educational system. Students should have the opportunity to observe and/or practice skills learned in class at various educational settings using school-to-career skills obtained in class (one Carnegie unit).

### **Course Description: Exploring Diversity in Instruction**

The Exploring Diversities in Instruction course provides students with the opportunity to gain knowledge and understand advanced information that must be instilled in educators. Students receive information pertaining to advanced communication skills, diverse learners, and various subject areas needed to work in the educational system. Students should have the opportunity to observe and/or practice skills learned in class at various educational settings using school-to-career skills obtained in class (one Carnegie unit). Before students can enroll in the Exploring Diversities and Communication course, they must meet the following requirements:

1. Score 80% or higher on the MC-CPAS2 summative assessment
2. Attendance rate of 92% or better in the Foundations of an Educator (Course Code: 996302) and the Practices of an Educator (Course Code: 996303)
3. Successfully complete a grade, discipline, and work ethic review by the teacher
4. Present an updated portfolio during the review-by-teacher session

### **Course Description: Progressive Practices of Teacher Academy**

The Progressive Practices of Teacher Academy course provides students with the opportunity to gain knowledge and understand progressive practices that must be instilled in educators. Students receive information pertaining to advanced planning instruction, teaching strategies, assessment, and professional learning needed to work in the educational system. Students should have the opportunity to observe and/or practice skills learned in class at various educational settings (one Carnegie unit).

### **Foundations of an Educator —Course Code: 996302**

Unit	Unit Name	Hours
1	Orientation and Safety	36
2	Teaching Career Opportunities	44
3	Human Growth and Development	60
Total		140

**Practices of an Educator —Course Code: 996303**

Unit	Unit Name	Hours
4	History and Trends in American Education	24
5	Effective Teaching and Learning Environment	72
6	Appreciating Diverse Learners	42
Total		138

**Exploring Diversity in Instruction —Course Code: 996304**

Unit	Unit Name	Hours
7	Instructional Strategies	65
8	Assessment Strategies	75
Total		140

**Progressive Practices of Teacher Academy —Course Code: 996305**

Unit	Unit Name	Hours
9	Instructional Planning	40
10	Field Experiences	75*
11	Professional Learning	20
Total		135
	*Hours may be distributed over a 2 year period.	

**Option 2—Two Two-Carnegie-Unit Courses**

This curriculum consists of two two-credit courses, which should be completed in the following sequence:

1. **Teacher Academy I—Course Code: 996300**
2. **Teacher Academy II—Course Code: 996301**

**Course Description: Teacher Academy I**

Teacher Academy I is an entry-level course. Students gain foundation competencies related to students as learners, planning and assessing teaching, teaching strategies, and communication skills. Students receive hands-on field experiences (two Carnegie units).

**Course Description: Teacher Academy II**

Teacher Academy II provides students with the opportunity to gain advanced skills needed to enhance them as learners, teachers, and communicators. Students receive advanced hands-on field experiences (two Carnegie units).

**Teacher Academy I —Course Code: 996300**

Unit	Unit Name	Hours
1	Orientation and Safety	36
2	Teaching Career Opportunities	44
3	Human Growth and Development	60
4	History and Trends in American Education	24
5	Effective Teaching and Learning Environment	72
6	Appreciating Diverse Learners	42
Total		278

**Teacher Academy II —Course Code: 996301**

Unit	Unit Name	Hours
7	Instructional Strategies	65
8	Assessment Strategies	75
9	Instructional Planning	40
10	Field Experiences	75*
11	Professional Learning	20
Total		275
	*Hours may be distributed over a 2 year period.	

# Research Synopsis

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## Introduction

There is an urgent need not only to attract more people into the teaching profession, but also to build a more diverse, highly qualified, and culturally sensitive teaching workforce that can meet the needs of a rapidly changing school-age population. The projected number of elementary, secondary, and community college teachers that will be needed in Mississippi significantly outweighs the number of students enrolled in teacher preparation programs throughout the state. The Teacher Academy program consists of four-Carnegie-unit courses delivered in a 2-year or 4-year option that will do the following:

- Recruit high-quality high school students for the teaching profession
- Give qualified high school students an opportunity to begin a successful career path to teaching
- Offer the opportunity to recruit and train quality students who may return to the district as tomorrow’s high-quality teachers. This is a “grow your own” solution to the current and looming shortage in the teaching profession
- Provide a framework for building solid partners with area institutions of higher education and offer exciting challenges and opportunities for the district’s students

## Needs of the Future Workforce

Employment (with industry job data from mdes.ms.gov table that was produced in cooperation with the U.S. Bureau of Labor Statistics)

Occupational title	Employment, 2010	Projected employment, 2020	Change 2010–2020		2013 Mean annual wage (in dollars)
			Number	Percent	

Postsecondary Teachers	11,570	13,630	2,060	17.8	N/A
Primary, Secondary, and Special Education School Teachers	42,000	47,540	5,540	13.2	43,730
Other Teachers and Instructors	7,340	8,260	920	12.5	46,000
Librarians, Curators, and Archivists	1,670	1,820	150	9.0	38,300
Other Education, Training, and Library Occupations	15,300	17,240	1,940	12.7	40,300
TOTAL	77,880	88,480	10,600	13.6	39,370

### Perkins IV Requirements

The Teacher Academy curriculum meets Perkins IV requirements of high-skill, high-wage, and/or high-demand occupations by introducing students to and preparing students for occupations. Additionally, the Teacher Academy curriculum is integrated with academic common core standards. Lastly, the curriculum focuses on ongoing and meaningful professional development for teachers as well as relationships with industry.

### Curriculum Content

#### Summary of Standards

The standards to be included in the Teacher Academy curriculum are the Common Career Technical Core (CCTC), the Common Core State Standards (CCSS), National Educational Technology Standards for Students, National Board Professional Teaching Standards, and 21st Century Skills and Information and Communication Technologies Literacy Standards. Aligning the curriculum content to these standards will result in students who are highly skilled, well-rounded, more academically proficient, and more likely to be successful in community colleges, Institutions of Higher Learning and the workforce.



## **Academic Infusion**

The Teacher Academy curriculum is aligned to the CCSS for high school Language Arts and Mathematics. The CCSS are aligned with college and work expectations and include rigorous content and application of knowledge through high-order skills. This applied approach to learning academic skills has long been the practice in career and technical education and brings relevance and enhances and reinforces these academic skills. Throughout the curriculum, students will be required to perform calculations and use strategic and critical thinking skills to solve real world problems.

## **Transition to Postsecondary Education**

The latest articulation information for Secondary to Postsecondary can be found at the Mississippi Community College Board (MCCB) website <http://www.mccb.edu/>

## **Best Practices**

### *Innovative Instructional Technologies*

Recognizing that today's students are digital learners, the classroom should be equipped with tools that will teach them in the way they need to learn. The Teacher Academy's goal educator's goal should be to include teaching strategies that incorporate current technology. To make use of the latest online communication tools such as wikis, blogs, and podcasts, the classroom teacher is encouraged to use a learning management system that introduces students to education in an online environment and places the responsibility of learning on the student.

### *Differentiated Instruction*

Students learn in a variety of ways. Some are visual learners, needing only to read information and study it to succeed. Others are auditory learners, thriving best when information is read aloud to them. Still others are tactile learners, needing to participate actively in their

learning experiences. Add the student's background, emotional health, and circumstances, and a very unique learner emerges. Many activities are graded by rubrics that allow students to choose the type of product they will produce. By providing various teaching and assessment strategies, students with various learning styles can succeed.

#### *Career and Technical Education Student Organizations*

Teachers should investigate opportunities to sponsor a student organization. There are several here in Mississippi that will foster the types of learning expected from the Teacher Academy curriculum. The FEA is one example of a student organization for Teacher Academy. Student organizations provide participants/members with growth opportunities and competitive events. Student organizations also open the doors to the world of teaching and scholarship opportunities.

#### *Cooperative Learning*

Cooperative learning can help students understand topics when independent learning cannot. Therefore, you will see several opportunities in the Teacher Academy curriculum for group work. To function in today's workforce, students need to be able to work collaboratively with others and solve problems without excessive conflict. The Teacher Academy curriculum provides opportunities for students to work together and help each other to complete complex tasks. There are many field experiences within the Teacher Academy curriculum that will allow and encourage collaboration with professionals currently in the teaching field of education.

#### **Conclusions**

The Teacher Academy Curriculum will prepare students for a continued education-oriented pathway to be pursued at a Community College or University. This curriculum provides an excellent overview of the teaching profession. This curriculum is designed to encourage and educate students to be the best teachers for the future.

# Professional Organizations

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American Alliance for Health, Physical Education,  
Recreation, and Dance  
1900 Association Drive  
Reston, VA 22091  
(800) 213-7193  
<http://www.aahperd.org>

American Association of Physics Teachers  
One Physics Ellipse  
College Park, MD 20740-3845  
(301) 209-3311  
<http://www.aapt.org>

American Council of the Teaching of Foreign  
Languages  
6 Executive Plaza  
Yonkers, NY 10701-6801  
(914) 963-8830

American Federation of Teachers  
555 New Jersey Avenue, NW  
Washington, DC 20001  
(202) 879-4400  
<http://www.aft.org>

American Library Association  
50 E. Huron Street  
Chicago, IL 60611  
(800) 545-2433  
<http://www.ala.org>

American School Counselor Association  
1101 King Street, Suite 625  
Alexandria, VA 22314  
(703) 683-2722  
<http://www.schoolcounselor.org>

American Speech-Language-Hearing Association  
2200 Research Boulevard  
Rockville, MD 20850-3289  
(800) 638-8255  
<http://www.asha.org>

Association for Middle Level Education  
4151 Executive Parkway, Suite 300  
Westerville, OH 43081  
(800) 528-6672  
<http://www.amle.org>

Association of Career and Technical Education  
1410 King Street  
Alexandria, VA 22314  
(800) 826-9972

<http://www.acteonline.org>

Association for Childhood Education International  
1101 16th St., N.W., Suite 300  
(800) 423-3563  
[acei.org](http://www.acei.org)

Association for Education Communications and  
Technology  
320 W. 8th Street, Suite 101  
Bloomington, IN 47404-3745  
(812) 335-7675  
<http://www.aect.org>

Association for Experimental Education  
3775 Iris Avenue, Suite #4  
Boulder, CO 80301-2043  
(303) 440-8844  
<http://www.aee.org>

Association for Supervision and Curriculum  
Development  
1703 N. Beauregard Street  
Alexandria, VA 22311  
(800) 933-2723, press 1  
<http://www.ascd.org>

Council for Exceptional Children  
2900 Crystal Drive, Suite 1000  
Arlington, VA 22202-3557  
(888) 232-7733  
[sped.org](http://www.sped.org)

Council for Learning Disabilities  
11184 Antioch Road Box 405  
Overland Park, KS 66210  
(913) 491-1011  
<http://www.cldinternational.org>

International Reading Association  
800 Barksdale Road  
P.O. Box 8139  
Newark, DE 19714-8139  
(800) 336-7323  
<http://www.reading.org>

International Society for Technology  
in Education  
180 West 8<sup>th</sup> Ave, Suite 300  
Eugene, OR 97401-2916  
(800) 336-5191  
<http://www.iste.org>

Kappa Delta Pi  
3707 Woodview Trace  
Indianapolis, IN 46268-1158  
(800) 284-3167  
<http://www.kdp.org>

Learning Disabilities Association of America  
4156 Library Road  
Pittsburgh, PA 15234-1349  
(412) 341-1515  
<http://www.ldanatl.org>

Modern Language Association  
26 Broadway, Third Floor  
New York, NY 10004-1789  
(646) 576-5000  
<http://www.mla.org>

Music Teachers National Association  
441 Vine Street, Suite 3100  
Cincinnati, OH 45202-3004  
(888) 512-5278  
[www.mtna.org](http://www.mtna.org)

National Alliance of Black School Educators  
310 Pennsylvania Ave SE  
Washington, DC 20003  
(800) 221-2654  
<http://www.nabse.org>

National Art Educators Association  
1806 Robert Fulton Drive, Suite 300  
Reston, VA 20191  
(703) 860-8000  
<http://www.naea-reston.org>

National Association for Bilingual Education  
8701 Georgia Avenue, Suite 700  
Silver Spring, MD 20910  
(240) 450-3799  
<http://www.nabe.org>

National Association for Gifted Children  
1331 H Street NW, Suite 1001  
Washington, DC 20005  
(202) 785-4268  
<http://www.nagc.org>

National Association for the Education of Young  
Children  
1313 L Street, NW Suite 500  
Washington, DC 20005  
(800) 424-2460  
<http://www.naeyc.org>

National Association of Biology Teachers  
1313 Dolley Madison Blvd, Suite 402  
McLean, VA 22101  
(800) 501-NABT  
<http://www.nabt.org>

National Association of Elementary School  
Principals  
1615 Duke Street  
Alexandria, VA 22314  
(800) 386-2377  
<http://www.naesp.org>

National Association of School Psychologists  
4340 East West Hwy., Suite 402  
Bethesda, MD 20814  
(866) 331-NASP  
<http://www.nasponline.org>

National Association of Secondary School Principals  
1904 Association Drive  
Reston, VA 22091-1537  
(703) 860-0200  
<http://www.nassp.org>

National Business Education Association  
1914 Association Drive  
Reston, VA 20191-1596  
(703) 860-8300  
<http://www.nbea.org>

National Catholic Education Association  
1005 North Glebe Road, Suite 525  
Arlington, VA 22201  
(800) 711-6232  
<http://www.ncea.org>

National Council for the Social Studies  
8555 Sixteenth Street, Suite 500  
Silver Spring, MD 20910  
(301) 588-1800  
<http://www.ncss.org>

National Council of Teachers of English  
1111 W. Kenyon Road  
Urbana, IL 61801-1096  
(217) 328-3870  
<http://www.ncte.org>

National Council of Teachers of Mathematics  
1906 Association Drive  
Reston, VA 20191-1502  
(703) 620-9840  
<http://www.nctm.org>

National Education Association  
1201 16th Street NS  
Washington, DC 20036-3290  
(202) 833-4000  
<http://www.nea.org>

National Rural Education Association  
Dr. John Hill, Purdue University  
Beering Hall of Liberal Arts and Education  
100 N. University St.

West LaFayette, IN 47907  
(765) 494-0086  
<http://www.nrea.net>

National Science Teachers Association  
1840 Wilson Boulevard  
Arlington, VA 22201-3000  
(703) 243-7100  
<http://www.nsta.org>

# Using This Document

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## **Suggested Time on Task**

This section indicates an estimated number of clock hours of instruction that should be required to teach the competencies and objectives of the unit. A minimum of 140 hours of instruction is required for each Carnegie unit credit. The curriculum framework should account for approximately 75–80% of the time in the course.

## **Competencies and Suggested Objectives**

A competency represents a general concept or performance that students are expected to master as a requirement for satisfactorily completing a unit. Students will be expected to receive instruction on all competencies. The suggested objectives represent the enabling and supporting knowledge and performances that will indicate mastery of the competency at the course level.

## **Integrated Academic Topics, 21st Century Skills and Information and Communication Technology Literacy Standards, ACT College Readiness Standards, and Technology Standards for Students**

This section identifies related academic topics as required in the Subject Area Testing Program (SATP) in Algebra I, Biology I, English II, and U.S. History from 1877, which are integrated into the content of the unit. Research-based teaching strategies also incorporate ACT College Readiness standards. This section also identifies the 21st Century Skills and Information and Communication Technology Literacy skills. In addition, national technology standards for students associated with the competencies and suggested objectives for the unit are also identified.

## **References**

A list of suggested references is provided for each unit. The list includes some of the primary instructional resources that may be used to teach the competencies and suggested objectives. Again, these resources are suggested, and the list may be modified or enhanced based on needs and abilities of students and on available resources.

# Unit 1: Orientation and Safety

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<b>Competencies and Suggested Objectives</b>	
1. Analyze the importance of using technology in the instructional process (ongoing). <sup>DOK 3</sup> NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4	a. Examine acceptable policies for use of technology in schools, including strategies for addressing threats to security. b. Identify legal/ethical behavior and safety issues regarding the use of technology and information. c. List and discuss various types of technology. d. Explore and use technology to solve problems and make decisions
2. Apply safety procedures in the Teacher Academy classroom and lab. <sup>DOK 2</sup> , NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4	a. Discuss the proper classroom and lab safety procedures. b. Demonstrate proper care and use of various equipment in the Teacher Academy classroom and lab
3. Analyze the role of service learning in teaching and learning. <sup>DOK 4</sup> , NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4	a. Define service learning. b. Research service learning opportunities in the community. c. Discuss, design and carry out a service learning project in the community.(ongoing)

## Scenario

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### Unit 1

There is no scenario for this unit.

### Attachments for Scenario

None

Refer to the presentation rubric in the teacher resources document found on the RCU Curriculum Download page: [www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx](http://www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx)

## Unit 2: Teaching Career Opportunities

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<b>Competencies and Suggested Objectives</b>
<p>1. Identify and research educational, occupational, and leadership opportunities in the Teacher Academy. <small>DOK2, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</small></p> <ol style="list-style-type: none"><li>Introduce career opportunities and in education.</li><li>Identify and describe leadership opportunities available from student youth organizations (Future Educators Association, FEA) in the school and community.</li><li>Explain to students what the Teacher Academy is, why it is important, and how it will be delivered and assessed (course objectives and program policies).</li></ol>
<p>2. Determine knowledge, skills, and dispositions needed to work in the teaching profession. <small>DOK 2, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</small></p> <ol style="list-style-type: none"><li>List dispositions of effective teachers.</li><li>Discuss the importance of self-directed learning.</li><li>Discuss the importance that all students can learn.</li><li>Discuss that students learn at different paces even when exposed to the same educational experience.</li><li>Create a generic cover letter using the writing process.</li><li>Create a high-quality one-page resume.</li><li>List the requirements to become a certified teacher in the state of Mississippi (degree, certification exams, licensing).</li></ol>

## Scenario

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### Unit 2

#### Teaching Career Opportunities Scenario

You have been selected to be in charge of recruiting high school freshman to enroll in Teacher Academy for the next school year. You must prepare a 15 minute oral and visual presentation to be given to the underclassmen. Your presentation should include the following:

- Description of Teacher Academy and Future Educators Association
- Career opportunities available in the field of education
- Knowledge, skills, and disposition of effective teachers
- Requirements to become a teacher in the state of Mississippi

#### Attachments for Scenario

None

Refer to the presentation rubric in the teacher resources document found on the RCU Curriculum Download page: [www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx](http://www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx)



## Unit 3: Human Growth and Development

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### Competencies and Suggested Objectives

1. Compare and contrast the cognitive, physical, emotional, and social development characteristics of the learner from birth to adolescence. <sup>DOK3, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</sup>
  - a. Examine the developmental characteristics of the learner from birth to age 4 years.
  - b. Examine the developmental characteristics of the learner from ages 5 to 10 years.
  - c. Examine the developmental characteristics of the learner from ages 11 to 18 years.
2. Discuss developmental theories related to human growth and development. <sup>DOK2, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</sup>
  - a. List important Human Growth and Development theorists. (Pavlov, Piaget, Skinner, Erickson, Maslow, Bandura, Vygotsky)
  - b. Connect theorists and their theories to the learning environment.

# Scenario

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## Unit 3

### Human Growth & Development Scenario I

(This scenario can be completed as a team activity or as an individual.)

You are an instructional coach for the Riddell School District. You are faced with several first-year teachers who are struggling with understanding the developmental characteristics of their students and how it is directly linked to the learning environment. You must create a manual that would serve as a resource for teachers to use as a reference in their classroom that you will present at the upcoming professional development meeting.

The manual should include the following:

- The cognitive, physical, emotional, and social characteristics of a preschool, primary, elementary/middle, and high school student
- Identify human growth development theories/theorists (Pavlov, Piaget, Skinner, Erickson, Maslow, Bandura, and Vygotsky).
  - Theorist who developed the theory
  - Detailed description of theory
  - An example of how it can be implemented in a classroom

### Human Growth & Development Scenario II

You are presenting to a group of third-grade parents on the topic of developmental milestones. You will be sharing information with them about the cognitive, physical, emotional, and social development characteristics children at this age should be demonstrating. You will prepare a presentation to include information that covers each of the developmental categories. Include activities in which children at this stage would benefit by participating. Share some appropriate titles of books that students at this age would be likely to read and would be developmentally appropriate for them. Conclude your presentation with some ideas and strategies for activities the parents could use to help their children learn at home.

### Attachments for Scenario

None

Refer to the presentation rubric in the teacher resources document found on the RCU Curriculum Download page: [www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx](http://www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx)

# Unit 4: History and Trends in American Education

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<b>Competencies and Suggested Objectives</b>	
1. Summarize how historical figures and events influence education. <small>DOK3, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</small>	
a. Identify historical figures and summarize their contributions to education. (Benjamin Franklin, Thomas Jefferson, Horace Mann, Friedrich Froebel, and John Dewey)	
b. Identify historical events and summarize effects on education. (desegregation and equal opportunity)	
2. Discuss the relationship of school and society. <small>DOK 2, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</small>	
a. Explain governance of schools at the state, local, and building levels.	
b. Examine current trends and issues that affect the future of education in different types of educational settings.	

## Scenario

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### Unit 4

#### History and Trends in American Education

You are an administrator at an urban high school. The student population of your school consists of various socio-economic status and race. You are faced with inequality, segregation, and gang-related violence among the student population. You must develop a plan to reduce these problems and encourage unity among attendees. Once you have decided on a course of action, you will develop a written plan and oral presentation. When devising a plan of action, include the theories and practices of historical contributors to education, current educational trends, and school governance as related to your solution.

#### Attachments for Scenario

None

Refer to the presentation rubric in the teacher resources document found on the RCU Curriculum Download page: [www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx](http://www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx)

## Unit 5: Effective Teaching and Learning Environment

<b>Competencies and Suggested Objectives</b>	
1. Analyze characteristics, skills, and resources necessary for effective teaching. <sup>DOK 2, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</sup>	<ol style="list-style-type: none"><li>a. Describe characteristics of a competent teacher.</li><li>b. Research and analyze effective teaching styles (Formal Authority, Demonstrator, Facilitator, and Delegator).</li><li>c. Identify how to maintain student attention and engage students in active learning.</li><li>d. Exhibit collaboration and team building among colleagues</li></ol>
2. Identify, demonstrate, and evaluate communication skills in the field of education. <sup>DOK 2, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</sup>	<ol style="list-style-type: none"><li>a. Explain the powerful role of language and communication in learning.</li><li>b. Become familiar with and practice active listening skills.</li><li>c. Explore and practice the various ways to communicate effectively (verbal, nonverbal, and written.)</li></ol>
3. Research, describe, and design an effective learning environment. <sup>DOK 3, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</sup>	<ol style="list-style-type: none"><li>a. Distinguish between an effective and ineffective cultural learning climate.</li><li>b. Discuss and design an effective physical classroom setting.</li></ol>
4. Identify and discuss classroom management styles and strategies. <sup>DOK 2</sup>	<ol style="list-style-type: none"><li>a. Explain time on task and how it relates to instructional pacing.</li><li>b. Establish classroom routines.</li><li>c. Differentiate between authoritative, authoritarian, permissive, and indulgent classroom management styles.</li></ol>

# Scenario

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## Unit 5

### An Effective Teaching and Learning Environment Scenario I

You are a special education teacher co-teaching in a third grade classroom. You are faced with several students that are reading below grade level and that have no interest in reading. You must work collaboratively with the general education teacher to develop a plan to improve the literacy skills of these students and enhance their desire to read. Once you have decided on a course of action, you will develop a written plan (e.g. lesson plan) and teach it through role play to a group of students. The completed plan must emphasize characteristics of a competent teacher, types of effective teaching styles, active learning, effective communication, team building among colleagues. It should also include a classroom diagram to portray an effective learning environment.

### An Effective Teaching and Learning Environment Scenario II

You have been called back for a second interview at a school where you have applied. You have been given the following information and must complete each component to present to the administration and interview committee during your interview.

You have been hired as a teacher in an elementary classroom. You have 18 students at various levels of learning. You have one student that is confined to a wheel chair. Design an effective physical classroom setting that includes the following: whole group area, small-group area, computer station/area, and area(s) where students will work independently. In your design, make sure to show where students will enter and exit the classroom. Describe how you will establish a classroom climate where students feel welcome and safe. (Include one specific activity in which you will have students participate to help in building this type of environment.) Describe how you will motivate students to engage in learning, participate in classroom discussions and classroom activities, and complete their assignments on time. Describe your classroom-management style. Develop a classroom-management plan and how you plan to implement this plan with your students.

#### Classroom Design:

- whole group area
- small-group area
- computer station/area
- independent work stations for students
- accessibility for student in wheel chair
- entrance/exit shown
- reflection/reasoning for classroom design
  
- classroom climate description
- activity for building a welcoming and safe environment

- \_\_\_ description for motivating students
- \_\_\_ engagement in learning
- \_\_\_ participation in classroom discussions/classroom activities
- \_\_\_ completion of assignments

- \_\_\_ description of classroom-management style
- \_\_\_ classroom-management plan
- \_\_\_ implementation of classroom-management plan

**Attachments for Scenario**

None

Refer to the presentation rubric in the teacher resources document found on the RCU Curriculum Download page: [www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx](http://www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx)

## Unit 6: Appreciating Diverse Learners

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<b>Competencies and Suggested Objectives</b>	
1. Compare and contrast various learning styles/multiple intelligences. <small>DOK3, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</small>	
a. Analyze the four learning styles (visual, auditory, tactile, and kinesthetic).	
b. Identify and analyze Howard Gardner's Multiple Intelligences.	
2. Describe examples of diversity and how they affect the learning process (e.g., cultural, religious, regional, gender, ethnic, and physical). <small>DOK 2, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</small>	
a. Recognize the importance of looking beyond the physical qualities of people to develop an appreciation for individuals who may be different.	
b. Explore how culture, religion, region, gender, and ethnic differences impact the teaching/learning process.	
3. Define types of learner exceptionality. <small>DOK 2, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</small>	
a. Develop awareness of the obstacles that individuals with disabilities face, both in school and within the community.	
b. Distinguish different disabilities and/or exceptionalities and how they influence the teaching/learning process. (special education and gifted education)	
• autism	
• deaf-blindness	
• deafness	
• multiple disabilities	
• orthopedic disabilities	
• emotional disturbance	
• developmental delay	
• other health impairment	
• specific learning disability	
• hearing impairment	
• intellectual disability	
• speech or language impairment	
• traumatic brain injury	
• visual impairment, including blindness	
c. Distinguish between the continuums of placement for disabled students.	
• LRE	
• FAPE	
• IDEA	
• ADA	
• PL 504	
• Assistive Technology Act	
d. Identify methods for modifying lessons to accommodate learning differences. (both special education and gifted education)	

# Scenario

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## Unit 6

You are a newly hired teacher for a fifth grade classroom at an inner city school. Your classroom consists of 23 students from various backgrounds and abilities:

23 students total (12 boys, 11 girls; 4 different ethnic backgrounds; 1 ESL student; various religious backgrounds, 6 above grade level, 12 on grade level, 5 below grade level)

1 student	hearing Impaired, requires head phone for better hearing
2 students	minor speech impairment
1 student	emotional disturbance
3 students	gifted education
3 students	special education

During a post-conference after a recent evaluation, your administrator stated concern about minor discriminations observed among students during small-group learning. You have been asked to create a classroom environment that maximizes learning, limiting the discriminations due to difference in culture and ability. Once you have decided on a course of action, you will present this plan to your principle, students, parents, and co-teacher.

### Attachments for Scenario

None

Refer to the presentation rubric in the teacher resources document found on the RCU Curriculum Download page: [www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx](http://www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx)



# Unit 7: Instructional Strategies

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## Competencies and Suggested Objectives

1. Implement research-based instructional strategies into lesson planning. (DOK 2)
  - a. Recognize, define, and distinguish between the 5 categories of Instructional Strategies.
    - direct instruction
    - indirect instruction
    - interactive instruction
    - independent study
    - experiential learning
  - b. Discuss Bloom's Taxonomy and Webb's Depth of Knowledge.
  - c. Demonstrate various instructional skills necessary for student learning to take place in the educational environment.
    - explaining
    - demonstrating
    - questioning (questioning techniques, levels of questions, wait time)

## Scenario

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### Unit 7

#### Instructional Strategies Scenario

You are a \*second grade teacher at Riddell Primary School. You are teaching a unit on \*money and you are trying to ensure that you incorporate teaching strategies and questions that cover each level of Bloom's Taxonomy/Webb's Depth of Knowledge. You must create a reference sheet that you will use to formulate your lesson plans.

The sheet should include the following:

- The appropriate levels of Bloom's Taxonomy/Webb's Depth of Knowledge
- Sample questions that will be used to assess student learning for each level
- Sample strategies/objectives that you will incorporate for each level
- Distinguish which of the five instructional strategy categories the strategy falls under

\*grade level and content maybe changed for the scenario

#### Attachments for Scenario

None

Refer to the presentation rubric in the teacher resources document found on the RCU Curriculum Download page: [www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx](http://www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx)

## Unit 8: Assessment Strategies

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### Competencies and Suggested Objectives

1. Describe types of assessments and how they should be used as part of the learning process. DOK 2, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4
  - a. Define the purposes of assessment.
  - b. Distinguish between formative and summative assessment.
  - c. Identify and explain the importance and purpose of multiple measures of assessments.
    - performance-based assessment
    - project-based assessment
    - checklist
    - observation
    - rubrics
    - standardized tests
2. Analyze assessment results as part of the learning process. DOK 3, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4
  - a. Define assessment as a means for improving instruction and learning.
  - b. Observe and determine when the classroom teacher provides feedback and re-teaches.
  - c. Discuss mastery learning.
  - d. Maintain personal records of assignments and progress. (the student's personal grades)

# Scenario

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## Unit 8

### Assessment Strategies Scenario

As a teacher at the Oak Center School District, you have been asked by your principal to speak to the local parent-teacher organization on the topic of assessments. You should expect approximately 100 parents to attend. Create a 20 minute presentation to explain the following:

- Purpose of assessments
- Difference between formative and summative assessments
- Forms of assessments including performance based, project based, checklists, observations, rubrics, and standardized tests.
- Assessment results as part of the learning process

### Attachments for Scenario

None

Refer to the presentation rubric in the teacher resources document found on the RCU Curriculum Download page: [www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx](http://www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx)

## Unit 9: Instructional Planning

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### Competencies and Suggested Objectives

- |  |
|--|
| <p>1. Analyze components of instructional planning. <small>DOK3, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</small></p> <ol style="list-style-type: none"><li>Explore academic and career and technical curriculum frameworks.</li><li>Identify behavioral objective/performance indicators within the frameworks.</li><li>Compare and contrast the difference between guided practice and independent practice.</li><li>Identify what the teacher will do and what the students will do within the lesson plan procedure:<ul style="list-style-type: none"><li>Prepare an opening (hook and anticipatory set) and closing to the lesson.</li><li>List materials, equipment, supplies, and preparations.</li><li>Illustrate appropriate sequence of instruction.</li><li>Identify assessment strategies.</li></ul></li></ol> |
| <p>2. Develop lesson plans that identify the elements of an effective lesson for all learners. (ongoing) <small>DOK 3, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</small></p> <ol style="list-style-type: none"><li>Locate competencies and objectives within the Mississippi Curriculum Framework.</li><li>State clear long-term and short-term educational goals and objectives for learners.</li><li>Create a lesson plan to aid learners in meeting competencies and objectives.</li><li>Explain the alignment of specific goals, instructional plans, and assessment.</li><li>Identify strategies for instructional planning for diverse learners.</li><li>Locate and use instructional resources.</li></ol>  |

## Scenario

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### Unit 9

You have been asked to design a lower elementary classroom science lesson plan on the life cycle of a butterfly. Create a simple lesson plan that includes the following information: a grade level or range for the lesson focus, a hook, a lesson objective that includes a DOK2, learning activities with appropriate sequence that includes guided and independent practice, formative and summative assessment, and appropriate differentiated-learning activities for diverse learners. Make sure you include materials needed and sources used. You will be asked to give a copy of this lesson plan to an elementary classroom teacher for his/her use.

### Attachments for Scenario

None

Refer to the presentation rubric in the teacher resources document found on the RCU Curriculum Download page: [www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx](http://www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx)

# Unit 10: Field Experiences

<b>Competencies and Suggested Objectives</b>	
<p>1. Participate in preschool, elementary, and secondary classroom experiences. <small>DOK 4, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</small></p> <ul style="list-style-type: none"> <li>a. Work under the guidance of the Teacher Academy instructor and the classroom teacher.</li> <li>b. Display effective interpersonal skills.</li> <li>c. Demonstrate the ability to relate to students in a classroom setting.</li> <li>d. Exercise tact, discretion, and confidentiality.</li> <li>e. Submit a resume and cover letter to the principal and supervising teacher prior to beginning field experience.</li> <li>f. Observe and record the classroom teacher's actions, the students' progress, and classroom procedures.</li> <li>g. Discuss assigned duties with classroom teacher.</li> <li>h. Prepare lesson materials, bulletin boards, displays, and instructional games.</li> <li>i. Prepare lesson plans according to guidelines set by the Teacher Academy instructor and the classroom teacher.</li> <li>j. Tutor and assist students individually or in small groups, as directed by the teacher.</li> <li>k. Distribute teaching materials to students. (textbooks, papers, and supplies)</li> <li>l. Create and present mini-lessons/ activities to students under the direction and guidance of the teacher.</li> <li>m. Assist students with technology in the classroom.</li> <li>n. Provide extra assistance to students with special needs. (those with physical or mental disabilities; non-English-speaking students)</li> </ul>	
<p>2. Analyze the importance of subject-matter knowledge and integrated learning. <small>DOK 3, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4</small></p> <ul style="list-style-type: none"> <li>a. Explain a specific discipline's place in the school-wide curriculum</li> <li>b. Identify content standards and their source(s) for a specific discipline.</li> </ul>	
<p>3. Explore a minimum of two content area classrooms. <small>DOK 4, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</small></p> <ul style="list-style-type: none"> <li>a. Identify the content and grade level the student wants to teach.</li> <li>b. Observe lessons at your content and grade level.</li> <li>c. Investigate co-teaching model.</li> <li>d. Design a lesson to co-teach in the content and grade-level class.</li> </ul>	

# Scenario

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## **Unit 10**

There is no scenario for this unit.

## **Attachments for Scenario**

None

Refer to the presentation rubric in the teacher resources document found on the RCU Curriculum Download page: [www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx](http://www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx)

# Unit 11: Professional Learning

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Competencies and Suggested Objectives
1. Research and analyze professional learning in the field of education. <small>DOK 2, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</small> <ol style="list-style-type: none"><li>Identify the purpose of the INTASC (Interstate New Teachers Assessment and Support Consortium) National Standards for New Teachers.</li><li>Identify professional-learning resources.</li></ol>
2. Develop a plan for professional growth. <small>DOK 3, NBPTS 1, NBPTS 2, NBPTS 3, NBPTS 4, P1, P2, P3, P4</small> <ol style="list-style-type: none"><li>Participate in student-teaching focused organizations such as Future Educators Association (FEA).</li><li>Revise, update, and edit teaching and learning portfolios. Have students update their teaching and learning portfolios. (ongoing)</li><li>Formulate plan for an effective job search.</li></ol>

## Scenario

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### Unit 11

There is no scenario for this unit.

### Attachments for Scenario

None

Refer to the presentation rubric in the teacher resources document found on the RCU Curriculum Download page: [www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx](http://www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx)

# Student Competency Profile

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**Student's Name:** \_\_\_\_\_

This record is intended to serve as a method of noting student achievement of the competencies in each unit. It can be duplicated for each student, and it can serve as a cumulative record of competencies achieved in the course.

In the blank before each competency, place the date on which the student mastered the competency.

<b>Unit 1: Orientation and Safety</b>	
	1. Analyze the importance of using technology in the instructional process. (ongoing)
	2. Apply safety procedures in the Teacher Academy classroom and lab.
	3. Analyze the role of service learning in teaching and learning.
<b>Unit 2: Teaching Career Opportunities</b>	
	1. Identify and research educational, occupational, and leadership opportunities in the Teacher Academy
	2. Determine knowledge, skills, and dispositions needed to work in the teaching profession.
<b>Unit 3: Human Growth and Development</b>	
	1. Compare and contrast the cognitive, physical, emotional, and social development characteristics of the learner from birth to adolescence.
	2. Discuss developmental theories related to human growth and development.
<b>Unit 4: History and Trends in American Education</b>	
	1. Summarize how historical figures and events influence education.
	2. Discuss the relationship of school and society.
<b>Unit 5: Effective Teaching and Learning Environment</b>	
	1. Analyze characteristics, skills, and resources necessary for effective teaching.
	2. Identify, demonstrate, and evaluate communication skills in the field of education.
	3. Research, describe, and design an effective learning environment.
	4. Identify and discuss classroom management styles and strategies.
<b>Unit 6: Appreciating Diverse Learners</b>	
	1. Compare and contrast various learning styles/multiple intelligences.
	2. Describe examples of diversity and how they affect the learning process. (e.g., cultural, religious, regional, gender, ethnic, and physical)
	3. Define types of learner exceptionality.
<b>Unit 7: Instructional Strategies</b>	



	1.	Implement research-based instructional strategies into lesson planning.
<b>Unit 8: Assessment Strategies</b>		
	1.	Describe types of assessments and how they should be used as part of the learning process
	2.	Analyze assessment results as part of the learning process.
<b>Unit 9: Instructional Planning</b>		
	1.	Analyze components of instructional planning.
	2.	Develop lesson plans that identify the elements of an effective lesson for all learners.
<b>Unit 10: Field Experiences</b>		
	1.	Participate in preschool, elementary, and secondary classroom experiences.
	2.	Analyze the importance of subject-matter knowledge and integrated learning.
	3.	Explore a minimum of two content-area classrooms.
<b>Unit 11: Professional Learning</b>		
	1.	Research and analyze professional learning in the field of education.
	2.	Develop a plan for professional growth.

## Appendix A: Unit References

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All of the Teacher Academy units use the same resources for each unit. You will find suggested resources listed below.

Kato, S. L. (2010). *Teaching*. Tinley Park, Ill.: Goodheart-Willcox Company.

Lemov, D. (2014). *Teach like a champion 2.0: 49 techniques that put students on the path to college*. S.l.: Jossey-Bass.

Parkay, F. W. (2013). *Becoming a teacher* (9th ed.). Boston: Pearson.

Shalaway, L. (2005). *Learning to teach: ...not just for beginners: the essential guide for all teachers* (Rev. and expanded 3rd. ed.). New York: Scholastic.

Tate, M. L. (2007). *Shouting won't grow dendrites: 20 techniques for managing a brain-compatible classroom*. Thousand Oaks, CA: Corwin Press.

Tate, M. L. (2010). *Worksheets don't grow dendrites: 20 instructional strategies that engage the brain* (2nd ed.). Thousand Oaks, Calif.: Corwin Press.

Wong, H. K., & Wong, R. T. (2009). *The first days of school: how to be an effective teacher* (New 4th ed.). Mountain View, California: Harry K. Wong.

# Appendix B: Industry Standards

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## National Board Professional Teaching Standards

Crosswalk for Teacher Academy												
	Units	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11
NBPTS1		X	X	X	X	X	X		X	X	X	X
NBPTS2		X	X	X	X	X	X	X	X	X	X	X
NBPTS3		X	X	X	X	X	X	X	X	X	X	X
NBPTS4		X	X	X	X	X	X	X	X	X	X	X
NBPTS5											X	X

# National Industry Standards

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## National Board Professional Teaching Standards

### **NBPTS 1: Teachers are Committed to Students and Learning**

- 1.1 NBCTs are dedicated to making knowledge accessible to all students. They believe all students can learn.
- 1.2 They treat students equitably. They recognize the individual differences that distinguish their students from one another and they take account for these differences in their practice.
- 1.3 NBCTs understand how students develop and learn.
- 1.4 They respect the cultural and family differences students bring to their classroom.
- 1.5 They are concerned with their students' self-concept, their motivation and the effects of learning on peer relationships.
- 1.6 NBCTs are also concerned with the development of character and civic responsibility.

### **NBPTS 2: Teachers Know the Subjects They Teach and How to Teach Those Subjects to Students.**

- 2.1 NBCTs have mastery over the subject(s) they teach. They have a deep understanding of the history, structure and real-world applications of the subject.
- 2.2 They have skill and experience in teaching it, and they are very familiar with the skills gaps and preconceptions students may bring to the subject.
- 2.3 They are able to use diverse instructional strategies to teach for understanding.

### **NBPTS 3: Teachers are Responsible for Managing and Monitoring Student Learning.**

- 3.1 NBCTs deliver effective instruction. They move fluently through a range of instructional techniques, keeping students motivated, engaged and focused.
- 3.2 They know how to engage students to ensure a disciplined learning environment, and how to organize instruction to meet instructional goals.
- 3.4 NBCTs know how to assess the progress of individual students as well as the class as a whole.
- 3.5 They use multiple methods for measuring student growth and understanding, and they can clearly explain student performance to parents.

### **NBPTS 4: Teachers Think Systematically about Their Practice and Learn from Experience.**

- 4.1 NBCTs model what it means to be an educated person – they read, they question, they create, and they are willing to try new things.
- 4.2 They are familiar with learning theories and instructional strategies and stay abreast of current issues in American education.
- 4.3 They critically examine their practice on a regular basis to deepen knowledge, expand their repertoire of skills, and incorporate new findings into their practice.

### **NBPTS 5: Teachers are Members of Learning Communities.**

- 5.1 NBCTs collaborate with others to improve student learning.
- 5.2 They are leaders and actively know how to seek and build partnerships with community groups and businesses.

5.3 They work with other professionals on instructional policy, curriculum development and staff development.

5.4 They can evaluate school progress and the allocation of resources in order to meet state and local education objectives.

5.5 They know how to work collaboratively with parents to engage them productively in the work of the school.

### Praxis Standards

Crosswalk for Teacher Academy												
	Units	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11
P1		X	X	X	X	X	X		X	X	X	X
P2		X	X	X	X	X	X	X	X	X	X	X
P3		X	X	X	X	X	X	X	X	X	X	X
P4		X	X	X	X	X	X		X	X	X	X

### PRAXIS Standards

#### P1 Students as Learners

- Student Development and the Learning Process
- Students as Diverse Learners
- Student Motivation and the Learning Environment

#### P2 Instruction and Assessment

- Instruction and Assessment
- Planning Instruction
- Assessment Strategies

#### P3 Teacher Professionalism

- The Reflective Practitioner
- The Larger Community

#### P4 Communication Techniques

- Basic, effective verbal and nonverbal communication techniques
- Effect of cultural and gender differences on communications in the classroom
- Types of communication and interactions that can stimulate discussion in different ways for particular purposes.

## Appendix C: 21st Century Skills<sup>1</sup>

21 <sup>st</sup> Century Crosswalk for Teacher Academy												
	Units	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11
21 <sup>st</sup> Century Standards												
CS1		X	X	X	X	X	X	X	X	X	X	X
CS2												
CS3				X	X							
CS4			X		X							
CS5												
CS6			X	X	X	X	X	X	X	X	X	X
CS7		X	X	X	X	X	X	X	X	X	X	X
CS8		X	X	X	X	X	X	X	X	X	X	X
CS9		X	X	X	X	X	X	X	X	X	X	X
CS10		X	X	X	X	X	X	X	X	X	X	X
CS11		X	X	X	X	X	X	X	X	X	X	X
CS12		X	X	X	X	X	X	X	X	X	X	X
CS13		X	X	X	X	X	X	X	X	X	X	X
CS14		X	X	X	X	X	X	X	X	X	X	X
CS15		X	X	X	X	X	X	X	X	X	X	X
CS16		X	X	X	X	X	X	X	X	X	X	X

### CSS1-21st Century Themes

#### CS1 Global Awareness

1. Using 21st century skills to understand and address global issues
2. Learning from and working collaboratively with individuals representing diverse cultures, religions, and lifestyles in a spirit of mutual respect and open dialogue in personal, work, and community contexts
3. Understanding other nations and cultures, including the use of non-English languages

#### CS2 Financial, Economic, Business, and Entrepreneurial Literacy

1. Knowing how to make appropriate personal economic choices
2. Understanding the role of the economy in society
3. Using entrepreneurial skills to enhance workplace productivity and career options

#### CS3 Civic Literacy

1. Participating effectively in civic life through knowing how to stay informed and understanding governmental processes
2. Exercising the rights and obligations of citizenship at local, state, national, and global levels
3. Understanding the local and global implications of civic decisions

#### CS4 Health Literacy

1. Obtaining, interpreting, and understanding basic health information and services and using such information and services in ways that enhance health
2. Understanding preventive physical and mental health measures, including proper diet, nutrition, exercise, risk avoidance, and stress reduction
3. Using available information to make appropriate health-related decisions

<sup>1</sup> *21st century skills*. (n.d.). Washington, DC: Partnership for 21st Century Skills.

4. Establishing and monitoring personal and family health goals
5. Understanding national and international public health and safety issues

**CS5 Environmental Literacy**

1. Demonstrate knowledge and understanding of the environment and the circumstances and conditions affecting it, particularly as relates to air, climate, land, food, energy, water, and ecosystems.
2. Demonstrate knowledge and understanding of society's impact on the natural world (e.g., population growth, population development, resource consumption rate, etc.).
3. Investigate and analyze environmental issues, and make accurate conclusions about effective solutions.
4. Take individual and collective action toward addressing environmental challenges (e.g., participating in global actions, designing solutions that inspire action on environmental issues).

CSS2-Learning and Innovation Skills

**CS6 Creativity and Innovation**

1. Think Creatively
2. Work Creatively with Others
3. Implement Innovations

**CS7 Critical Thinking and Problem Solving**

1. Reason Effectively
2. Use Systems Thinking
3. Make Judgments and Decisions
4. Solve Problems

**CS8 Communication and Collaboration**

1. Communicate Clearly
2. Collaborate with Others

CSS3-Information, Media and Technology Skills

**CS9 Information Literacy**

1. Access and Evaluate Information
2. Use and Manage Information

**CS10 Media Literacy**

1. Analyze Media
2. Create Media Products

**CS11 ICT Literacy**

1. Apply Technology Effectively

CSS4-Life and Career Skills

**CS12 Flexibility and Adaptability**

1. Adapt to change
2. Be Flexible

**CS13 Initiative and Self-Direction**

1. Manage Goals and Time
2. Work Independently

3. Be Self-directed Learners
- CS14 Social and Cross-Cultural Skills**
1. Interact Effectively with others
  2. Work Effectively in Diverse Teams
- CS15 Productivity and Accountability**
1. Manage Projects
  2. Produce Results
- CS16 Leadership and Responsibility**
1. Guide and Lead Others
  2. Be Responsible to Others



# Appendix D: Common Core Standards

Common Core Crosswalk for English/Language Arts (11-12)												
	Units	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11
<b>Common Core Standards</b>												
RL.11.1.												
RL.11.2.												
RL.11.3.												
RL.11.4.												
RL.11.5.												
RL.11.6.												
RL.11.7.												
RL.11.8.												
RL.11.9.												
RL.11.10.												
RI.11.1.												
RI.11.2.												
RI.11.3.												
RI.11.4.												
RI.11.5.												
RI.11.6.												
RI.11.7.												
RI.11.8.												
RI.11.9.												
RI.11.10.												
W.11.1.												
W.11.2.										X		
W.11.3.												
W.11.4.			X	X	X	X	X	X	X	X	X	X
W.11.5.			X	X	X	X	X	X	X	X	X	X
W.11.6.			X	X	X	X	X	X	X	X	X	X
W.11.7.		X	X	X	X	X	X	X	X	X	X	X
W.11.8.		X	X	X	X	X	X	X	X	X	X	X
W.11.9.										X		
W.11.10.												
SL.11.1.		X	X	X	X	X	X	X	X	X	X	X
SL.11.2.												
SL.11.3.												
SL.11.4.		X	X	X	X	X	X	X	X	X	X	X
SL.11.5.		X	X	X	X	X	X	X	X	X	X	X
SL.11.6.		X	X	X	X	X	X	X	X	X	X	X
L.11.1.		X	X	X	X	X	X	X	X	X	X	X
L.11.2.		X	X	X	X	X	X	X	X	X	X	X
L.11.3.		X	X	X	X	X	X	X	X	X	X	X
L.11.4.		X	X	X	X	X	X	X	X	X	X	X
L.11.5.												
L.11.6.			X	X	X	X	X	X	X	X	X	X
RH.11.1.					X							
RH.11.2.					X							
RH.11.3.					X							
RH.11.4.												
RH.11.5.												
RH.11.6.												
RH.11.7.			X	X	X	X	X	X	X	X	X	X
RH.11.8.												
RH.11.9.												
RH.11.10.												
RST.11.1.				X								
RST.11.2.				X								
RST.11.3.												

RST.11.4.												
RST.11.5.												
RST.11.6.												
RST.11.7.												
RST.11.8.												
RST.11.9.												
RST.11.10.				X								
WHST.11.1.												
WHST.11.2.												
WHST.11.3.												
WHST.11.4.			X	X	X	X	X	X	X	X	X	X
WHST.11.5.												
WHST.11.6.												
WHST.11.7.			X	X	X	X	X	X	X	X	X	X
WHST.11.8.												
WHST.11.9.												
WHST.11.10.			X	X	X	X	X	X	X	X	X	X

## Reading Standards for Literature (11-12)

### College and Career Readiness Anchor Standards for *Reading Literature*

#### Key Ideas and Details

RL.11.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.

RL.11.2. Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.

RL.11.3. Analyze the impact of the author’s choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).

#### Craft and Structure

RL.11.4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (Include Shakespeare as well as other authors.)

RL.11.5. Analyze how an author’s choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.

RL.11.6. Analyze a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).

## Integration of Knowledge and Ideas

RL.11.7. Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text. (Include at least one play by Shakespeare and one play by an American dramatist.)

RL.11.8. (Not applicable to literature)

RL.11.9. Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics.

## Range of Reading and Level of Text Complexity

RL.11.10. By the end of grade 11, read and comprehend literature, including stories, dramas, and poems, in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range.

By the end of grade 12, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 11–CCR text complexity band independently and proficiently.

## **Reading Standards for Informational Text (11-12)**

### **College and Career Readiness Anchor Standards for *Informational Text***

#### Key Ideas and Details

RI.11.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.

RI.11.2. Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.

RI.11.3. Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.

#### Craft and Structure

RI.11.4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines

the meaning of a key term or terms over the course of a text (e.g., how Madison defines faction in Federalist No. 10).

RI.11.5. Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.

RI.11.6. Determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.

### Integration of Knowledge and Ideas

RI.11.7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

RI.11.8. Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., The Federalist, presidential addresses).

RI.11.9. Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address) for their themes, purposes, and rhetorical features.

### Range of Reading and Level of Text Complexity

RI.11.10. By the end of grade 11, read and comprehend literary nonfiction in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range.

By the end of grade 12, read and comprehend literary nonfiction at the high end of the grades 11–CCR text complexity band independently and proficiently.

## **College and Career Readiness Anchor Standards for *Writing***

### Text Types and Purposes

W.11.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

- a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.

b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.

c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.

d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

e. Provide a concluding statement or section that follows from and supports the argument presented.

W.11.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

a. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.

b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.

c. Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.

d. Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.

e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

W.11.3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

- a. Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.
- b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters
- c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution).
- d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.
- e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.

#### Production and Distribution of Writing

W.11.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)

W.11.5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 11–12 on page 54.)

W.11.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

#### Research to Build and Present Knowledge

W.11.7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

W.11.8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

W.11.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

a. Apply grades 11–12 Reading standards to literature (e.g., “Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics”).

b. Apply grades 11–12 Reading standards to literary nonfiction (e.g., “Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning [e.g., in U.S. Supreme Court Case majority opinions and dissents] and the premises, purposes, and arguments in works of public advocacy [e.g., *The Federalist*, presidential addresses]”).

### Range of Writing

W.11.10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

## **College and Career Readiness Anchor Standards for *Speaking and Listening***

### Comprehension and Collaboration

SL.11.1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others’ ideas and expressing their own clearly and persuasively.

a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.

b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.

c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.

d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

SL.11.2. Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.

SL.11.3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.

### Presentation of Knowledge and Ideas

SL.11.4. Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.

SL.11.5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.

SL.11.6. Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate. (See grades 11–12 Language standards 1 and 3 on page 54 for specific expectations.)

## **College and Career Readiness Anchor Standards for *Language***

### Conventions of Standard English

L.11.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

a. Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested.

b. Resolve issues of complex or contested usage, consulting references (e.g., Merriam-Webster's Dictionary of English Usage, Garner's Modern American Usage) as needed.

L.11.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

a. Observe hyphenation conventions.

b. Spell correctly.



## Knowledge of Language

L.11.3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

- a. Vary syntax for effect, consulting references (e.g., Tufte’s Artful Sentences) for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.

## Vocabulary Acquisition and Use

L.11.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11–12 reading and content, choosing flexibly from a range of strategies.

- a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word’s position or function in a sentence) as a clue to the meaning of a word or phrase.
- b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., conceive, conception, conceivable).
- c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage.
- d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

L.11.5. Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

- a. Interpret figures of speech (e.g., hyperbole, paradox) in context and analyze their role in the text.
- b. Analyze nuances in the meaning of words with similar denotations.

L.11.6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

## **Reading Standards for Literacy in History/Social Studies (11-12)**

### Key Ideas and Details

RH.11.1 Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.

RH.11.2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas

RH.11.3. Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain

### Craft and Structure

RH.11.4. Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines faction in Federalist No. 10).

RH.11.5. Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.

RH.11.6. Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence.

### Integration of Knowledge and Ideas

RH.11.7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.

RH.11.8. Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other information.

RH.11.9. Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.

### Range of Reading and Level of Text Complexity

RH.11.10. By the end of grade 12, read and comprehend history/social studies texts in the grades 11–CCR text complexity band independently and proficiently.

## **Reading Standards for Literacy in Science and Technical Subjects (11-12)**

### Key Ideas and Details

RST.11.1. Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

RST.11.2. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

RST.11.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

### Craft and Structure

RST.11.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.

RST.11.5. Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.

RST.11.6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.

### Integration of Knowledge and Ideas

RST.11.7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

RST.11.8. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

RST.11.9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

## Range of Reading and Level of Text Complexity

RST.11.10. By the end of grade 12, read and comprehend science/technical texts in the grades 11–CCR text complexity band independently and proficiently.

## **Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects (11-12)**

### Text Types and Purposes

WHST.11.1. Write arguments focused on discipline-specific content.

- a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.
- b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience’s knowledge level, concerns, values, and possible biases.
- c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
- d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- e. Provide a concluding statement or section that follows from or supports the argument presented.

WHST.11.2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

- a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
- b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.

- c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
- d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.
- e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).

WHST.11.3. (Not applicable as a separate requirement)

#### Production and Distribution of Writing

WHST.11.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

WHST.11.5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

WHST.11.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

#### Research to Build and Present Knowledge

WHST.11.7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

WHST.11.8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

WHST.11.9. Draw evidence from informational texts to support analysis, reflection, and research.

## Range of Writing

WHST.11.10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

## Common Core Crosswalk for Mathematics (11-12)

	Units	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11
<b>Common Core Standards</b>												
N-RN.1.												
N-RN.2.												
N-RN.3.												
N-Q.1.												
N-Q.2.												
N-Q.3.												
N-CN.1.												
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N-CN.9.												
N-VM.1.												
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A-SSE.3.												
A-SSE.4.												
A-APR.1.												
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A-CED.4.												
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## Mathematics (High School)

### Number and Quantity

#### The Real Number System

N-RN.1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.

N-RN.2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.

N-RN.3. Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.

#### Quantities

N-Q.1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

N-Q.2. Define appropriate quantities for the purpose of descriptive modeling.

N-Q.3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

## The Complex Number System

N-CN.1. Know there is a complex number  $i$  such that  $i^2 = -1$ , and every complex number has the form  $a + bi$  with  $a$  and  $b$  real.

N-CN.2. Use the relation  $i^2 = -1$  and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.

N-CN.3. (+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.

N-CN.4. (+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.

N-CN.5. (+) Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. For example,  $(-1 + \sqrt{3}i)^3 = 8$  because  $(-1 + \sqrt{3}i)$  has modulus 2 and argument  $120^\circ$ .

N-CN.6. (+) Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.

N-CN.7. Solve quadratic equations with real coefficients that have complex solutions.

N-CN.8. (+) Extend polynomial identities to the complex numbers. For example, rewrite  $x^2 + 4$  as  $(x + 2i)(x - 2i)$ .

N-CN.9. (+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.

## Vector and Matrix Quantities

N-VM.1. (+) Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g.,  $v$ ,  $|v|$ ,  $\|v\|$ ,  $v$ ).

N-VM.2. (+) Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.

N-VM.3. (+) Solve problems involving velocity and other quantities that can be represented by vectors.

N-VM.4. (+) Add and subtract vectors

N-VM.4.a. Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes.

N-VM.4.b. Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum.

N-VM.4.c. Understand vector subtraction  $v - w$  as  $v + (-w)$ , where  $-w$  is the additive inverse of  $w$ , with the same magnitude as  $w$  and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.

N-VM.5. (+) Multiply a vector by a scalar.

N-VM.5.a. Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as  $c(v_x, v_y) = (cv_x, cv_y)$ .

N-VM.5.b. Compute the magnitude of a scalar multiple  $cv$  using  $\|cv\| = |c|v\|$ . Compute the direction of  $cv$  knowing that when  $|c|v \neq 0$ , the direction of  $cv$  is either along  $v$  (for  $c > 0$ ) or against  $v$  (for  $c < 0$ ).

N-VM.6. (+) Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.

N-VM.7. (+) Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.

N-VM.8. (+) Add, subtract, and multiply matrices of appropriate dimensions.

N-VM.9. (+) Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties

N-VM.10. (+) Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.

N-VM.11. (+) Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.

N-VM.12. (+) Work with  $2 \times 2$  matrices as transformations of the plane, and interpret the absolute value of the determinant in terms of area.

## Algebra

### Seeing Structure in Expressions

A-SSE.1. Interpret expressions that represent a quantity in terms of its context.

A-SSE.1.a. Interpret parts of an expression, such as terms, factors, and coefficients.

A-SSE.1.b. Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret  $P(1+r)^n$  as the product of  $P$  and a factor not depending on  $P$ .

A-SSE.2. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.

A-SSE.3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.

A-SSE.3.a. Factor a quadratic expression to reveal the zeros of the function it defines.

A-SSE.3.b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

A-SSE.3.c. Use the properties of exponents to transform expressions for exponential functions.

A-SSE.4. Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. For example, calculate mortgage payments.

### Arithmetic with Polynomials and Rational Expressions

A-APR.1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials

A-APR.2. Know and apply the Remainder Theorem: For a polynomial  $p(x)$  and a number  $a$ , the remainder on division by  $x - a$  is  $p(a)$ , so  $p(a) = 0$  if and only if  $(x - a)$  is a factor of  $p(x)$ .

A-APR.3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

A-APR.4. Prove polynomial identities and use them to describe numerical relationships.

A-APR.5. (+) Know and apply the Binomial Theorem for the expansion of  $(x + y)^n$  in powers of  $x$  and  $y$  for a positive integer  $n$ , where  $x$  and  $y$  are any numbers, with coefficients determined for example by Pascal's Triangle.

A-APR.6. Rewrite simple rational expressions in different forms; write  $a(x)/b(x)$  in the form  $q(x) + r(x)/b(x)$ , where  $a(x)$ ,  $b(x)$ ,  $q(x)$ , and  $r(x)$  are polynomials with the degree of  $r(x)$  less than the degree of  $b(x)$ , using inspection, long division, or, for the more complicated examples, a computer algebra system.

A-APR.7. (+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.

### Creating Equations

A-CED.1. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic

functions, and simple rational and exponential functions.

A-CED.2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

A-CED.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.

A-CED.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law  $V = IR$  to highlight resistance  $R$ .

### Reasoning with Equations and Inequalities

A-REI.1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

A-REI.2. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

A-REI.3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

A-REI.4. Solve quadratic equations in one variable.

A-REI.4.a. Use the method of completing the square to transform any quadratic equation in  $x$  into an equation of the form  $(x - p)^2 = q$  that has the same solutions. Derive the quadratic formula from this form.

A-REI.4.b. Solve quadratic equations by inspection (e.g., for  $x^2 = 49$ ), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as  $a \pm bi$  for real numbers  $a$  and  $b$ .

A-REI.5. Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.

A-REI.6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

A-REI.7. Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line  $y = -3x$  and the circle  $x^2 + y^2 = 3$ .

A-REI.8. (+) Represent a system of linear equations as a single matrix equation in a vector variable.

A-REI.9. (+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension  $3 \times 3$  or greater).

A-REI.10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).

A-REI.11. Explain why the  $x$ -coordinates of the points where the graphs of the equations  $y = f(x)$  and  $y = g(x)$  intersect are the solutions of the equation  $f(x) = g(x)$ ; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where  $f(x)$  and/or  $g(x)$  are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.

A-REI.12. Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

## Functions

### Interpreting Functions

F-IF.1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If  $f$  is a function and  $x$  is an element of its domain, then  $f(x)$  denotes the output of  $f$  corresponding to the input  $x$ . The graph of  $f$  is the graph of the equation  $y = f(x)$ .

F-IF.2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

F-IF.3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by  $f(0) = f(1) = 1$ ,  $f(n+1) = f(n) + f(n-1)$  for  $n \geq 1$ .

F-IF.4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.

F-IF.5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function  $h(n)$  gives the number of person-hours it takes to assemble  $n$  engines in a factory, then the positive integers would be an appropriate domain for the function.

F-IF.6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

F-IF.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.

F-IF.7.a. Graph linear and quadratic functions and show intercepts, maxima, and minima.

F-IF.7.b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

F-IF.7.c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.

F-IF.7.d. (+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.

F-IF.7.e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.

F-IF.8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.

F-IF.8.a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.

F-IF.8.b. Use the properties of exponents to interpret expressions for exponential functions.

F-IF.9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.

### Building Functions

F-BF.1. Write a function that describes a relationship between two quantities.

F-BF.1.a. Determine an explicit expression, a recursive process, or steps for calculation from a context.

F-BF.1.b. Combine standard function types using arithmetic operations. For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.

F-BF.1.c. (+) Compose functions. For example, if  $T(y)$  is the temperature in the atmosphere as a function of height, and  $h(t)$  is the height of a weather balloon as a function of time, then  $T(h(t))$  is the temperature at the location of the weather balloon as a function of time.

F-BF.2. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.

F-BF.3. Identify the effect on the graph of replacing  $f(x)$  by  $f(x) + k$ ,  $k f(x)$ ,  $f(kx)$ , and  $f(x + k)$  for specific values of  $k$  (both positive and negative); find the value of  $k$  given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.



F-BF.4. Find inverse functions.

F-BF.4.a. Solve an equation of the form  $f(x) = c$  for a simple function  $f$  that has an inverse and write an expression for the inverse.

F-BF.4.b. (+) Verify by composition that one function is the inverse of another.

F-BF.4.c. (+) Read values of an inverse function from a graph or a table, given that the function has an inverse.

F-BF.4.d. (+) Produce an invertible function from a non-invertible function by restricting the domain.

F-BF.5. (+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.

### Linear, Quadratic, and Exponential Models

F-LE.1. Distinguish between situations that can be modeled with linear functions and with exponential functions.

F-LE.1.a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.

F-LE.1.b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.

F-LE.1.c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another

F-LE.2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

F-LE.3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.

F-LE.4. For exponential models, express as a logarithm the solution to  $ab^ct = d$  where  $a$ ,  $c$ , and  $d$  are numbers and the base  $b$  is 2, 10, or  $e$ ; evaluate the logarithm using technology.

F-LE.5. Interpret the parameters in a linear or exponential function in terms of a context.

## Trigonometric Functions

F-TF.1. Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.

F-TF.2. Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.

F-TF.3. (+) Use special triangles to determine geometrically the values of sine, cosine, tangent for  $\pi/3$ ,  $\pi/4$  and  $\pi/6$ , and use the unit circle to express the values of sine, cosine, and tangent for  $\pi-x$ ,  $\pi+x$ , and  $2\pi-x$  in terms of their values for  $x$ , where  $x$  is any real number.

F-TF.4. (+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.

F-TF.5. Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.

F-TF.6. (+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.

F-TF.7. (+) Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.

F-TF.8. Prove the Pythagorean identity  $\sin^2(\theta) + \cos^2(\theta) = 1$  and use it to find  $\sin(\theta)$ ,  $\cos(\theta)$ , or  $\tan(\theta)$  given  $\sin(\theta)$ ,  $\cos(\theta)$ , or  $\tan(\theta)$  and the quadrant of the angle.

F-TF.9. (+) Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.

## **Geometry**

### Congruence

G-CO.1. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

G-CO.2. Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).

G-CO.3. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.

G-CO.4. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

G-CO.5. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.

G-CO.6. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.

G-CO.7. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.

G-CO.8. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.

G-CO.9. Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.

G-CO.10. Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to  $180^\circ$ ; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.

G-CO.11. Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.

G-CO.12. Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.

G-CO.13. Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.

## Similarity, Right Triangles, and Trigonometry

G-SRT.1. Verify experimentally the properties of dilations given by a center and a scale factor:

G-SRT.1.a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.

G-SRT.1.b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.

G-SRT.2. Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.

G-SRT.3. Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.

G-SRT.4. Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.

G-SRT.5. Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

G-SRT.6. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.

G-SRT.7. Explain and use the relationship between the sine and cosine of complementary angles.

G-SRT.8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

G-SRT.9. (+) Derive the formula  $A = \frac{1}{2} ab \sin(C)$  for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.

G-SRT.10. (+) Prove the Laws of Sines and Cosines and use them to solve problems.

G-SRT.11. (+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).

## Circles

G-C.1. Prove that all circles are similar.

G-C.2. Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.

G-C.3. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.

G-C.4. (+) Construct a tangent line from a point outside a given circle to the circle.

G-C.5. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

## Expressing Geometric Properties with Equations

G-GPE.1. Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.

G-GPE.2. Derive the equation of a parabola given a focus and directrix.

G-GPE.3. (+) Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.

G-GPE.4. Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point  $(1, \sqrt{3})$  lies on the circle centered at the origin and containing the point  $(0, 2)$ .

G-GPE.5. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

G-GPE.6. Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

G-GPE.7. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.

## Geometric Measurement and Dimension

G-GMD.1. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.

G-GMD.2. (+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.

G-GMD.3. Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.

G-GMD.4. Identify the shapes of two-dimensional cross-sections of three dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.

## Modeling with Geometry

G-MG.1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).

G-MG.2. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).

G-MG.3. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

## **Statistics and Probability**

### Interpreting Categorical and Quantitative Data

S-ID.1. Represent data with plots on the real number line (dot plots, histograms, and box plots).

S-ID.2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

S-ID.3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).

S-ID.4. Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate.

Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

S-ID.5. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.

S-ID.6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

S-ID.6.a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.

S-ID.6.b. Informally assess the fit of a function by plotting and analyzing residuals.

S-ID.6.c. Fit a linear function for a scatter plot that suggests a linear association.

S-ID.7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

S-ID.8. Compute (using technology) and interpret the correlation coefficient of a linear fit.

S-ID.9. Distinguish between correlation and causation.

### Making Inferences and Justifying Conclusions

S-IC.1. Understand statistics as a process for making inferences about population parameters based on a random sample from that population.

S-IC.2. Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?

S-IC.3. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.

S-IC.4. Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.

S-IC.5. Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.

S-IC.6. Evaluate reports based on data.

## Conditional Probability and the Rules of Probability

S-CP.1. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”).

S-CP.2. Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.

S-CP.3. Understand the conditional probability of A given B as  $P(A \text{ and } B)/P(B)$ , and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.

S-CP.4. Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.

S-CP.5. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.

S-CP.6. Find the conditional probability of A given B as the fraction of B’s outcomes that also belong to A, and interpret the answer in terms of the model.

S-CP.7. Apply the Addition Rule,  $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpret the answer in terms of the model.

S-CP.8. (+) Apply the general Multiplication Rule in a uniform probability model,  $P(A \text{ and } B) = P(A)P(B|A) = P(B)P(A|B)$ , and interpret the answer in terms of the model.

S-CP.9. (+) Use permutations and combinations to compute probabilities of compound events and solve problems.

## Using Probability to Make Decisions

(+) Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.



S-MD.2. (+) Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.

S-MD.3. (+) Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.

S-MD.4. (+) Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?

S-MD.5. (+) Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.

S-MD.5.a. Find the expected payoff for a game of chance. For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.

S-MD.5.b. Evaluate and compare strategies on the basis of expected values. For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.

S-MD.6. (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).

S-MD.7. (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

## Appendix E: National Educational Technology Standards for Students (NETS-S)

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<b>NETS Crosswalk for Insert curriculum name here</b>												
	Course	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11
<b>NETS Standards</b>												
T1			X	X	X	X	X	X	X	X	X	X
T2			X	X	X	X	X	X	X	X	X	X
T3			X	X	X	X	X	X	X	X	X	X
T4			X	X	X	X	X	X	X	X	X	X
T5		X	X	X	X	X	X	X	X	X	X	X
T6		X										

- T1** Creativity and Innovation
- T2** Communication and Collaboration
- T3** Research and Information Fluency
- T4** Critical Thinking, Problem Solving, and Decision Making
- T5** Digital Citizenship
- T6** Technology Operations and Concepts

- T1** Creativity and Innovation  
 Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students do the following:
- a. Apply existing knowledge to generate new ideas, products, or processes.
  - b. Create original works as a means of personal or group expression.
  - c. Use models and simulations to explore complex systems and issues.
  - d. Identify trends and forecast possibilities.
- T2** Communication and Collaboration  
 Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students do the following:
- a. Interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.
  - b. Communicate information and ideas effectively to multiple audiences using a variety of media and formats.
  - c. Develop cultural understanding and global awareness by engaging with learners of other cultures.
  - d. Contribute to project teams to produce original works or solve problems.

**T3 Research and Information Fluency**

Students apply digital tools to gather, evaluate, and use information. Students do the following:

- a. Plan strategies to guide inquiry.
- b. Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
- c. Evaluate and select information sources and digital tools based on the appropriateness to specific tasks.
- d. Process data and report results.

**T4 Critical Thinking, Problem Solving, and Decision Making**

Students use critical-thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Students do the following:

- a. Identify and define authentic problems and significant questions for investigation.
- b. Plan and manage activities to develop a solution or complete a project.
- c. Collect and analyze data to identify solutions and/or make informed decisions.
- d. Use multiple processes and diverse perspectives to explore alternative solutions.

**T5 Digital Citizenship**

Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students do the following:

- a. Advocate and practice safe, legal, and responsible use of information and technology.
- b. Exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.
- c. Demonstrate personal responsibility for lifelong learning.
- d. Exhibit leadership for digital citizenship.

**T6 Technology Operations and Concepts**

Students demonstrate a sound understanding of technology concepts, systems, and operations. Students do the following:

- a. Understand and use technology systems.
- b. Select and use applications effectively and productively.
- c. Troubleshoot systems and applications.
- d. Transfer current knowledge to learning of new technologies.