Rumson-Fair Haven Regional High School

Course: *Engineering I*
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Board Approval: August 2023
Revision Approval: November 2023

Section I: Course Description

Engineering I is an introductory semester course designed to promote an understanding and appreciation of the engineering design process. Students will gain experience in the following: critical thinking, teamwork, problem-solving, and computer skills. The course is project-based putting students in an active learning environment. Students are presented with problems and then work as teams to research and identify a solution to these problems. To solve challenges, students will integrate knowledge from a variety of disciplines, learn to work as a team and integrate these skills into application-based experiences. Projects include bridge construction, DC-powered cars, gliders, hovercrafts, catapults, and gearboxes.

Section II: NJSLS: New Jersey Student Learning Standards/Learning Objectives

1. ***2020 New Jersey Student Learning Standards – Science*:**
    - "Scientific and technological advances have proliferated and now permeate most aspects of life in the 21st century. It is increasingly important that all members of our society develop an understanding of scientific and engineering concepts and processes. Learning how to construct scientific explanations and how to design evidence-based solutions provides students with tools to think critically about personal and societal issues and needs. Students can then contribute meaningfully to decision-making processes, such as discussions about climate change, new approaches to health care, and innovative solutions to local and global problems."
2. ***2016 English Language Arts Companions for Grades 9-10 (History, Social Studies, Science and Technical Subjects):***
    - The ELA Standards were revised in 2016, with the recommendations of teams of teachers, parents, administrators, supervisors and other stakeholders and reflect the strong beliefs that, "...Literacy must be recognized and guided in content areas so that students recognize the academic vocabulary, media representations, and power of language inherent in the work of scholars and experts..."
3. ***Standard 8.1 (Computer Science) and 8.2 (Design Thinking) of the 2020 NJSLS:***
    - "The 'Intent and Spirit of the Computer Science and Design Thinking Standards' is to focus on deep understanding of concepts that enable students to think critically and systematically about leveraging technology to solve local and global issues. Authentic learning experiences that enable students to apply content knowledge, integrate concepts across disciplines, develop computational thinking skills, acquire and incorporate varied perspectives, and communicate with diverse audiences about the use and effects of computing prepares New Jersey students for college and careers."
4. ***2020 Career Readiness, Life Literacies, and Key Skills Standards (9.2 and 9.4):***
    - "Rapid advancements in technology and subsequent changes in the economy have created opportunities for individuals to compete and connect on a global scale. In this increasingly diverse and complex world, the successful entrepreneur or employee must not only possess the requisite education for specific industry pathways but also employability skills necessary to collaborate with others and manage resources effectively in order to establish and maintain stability and independence. This document outlines concepts and skills necessary for New Jersey's students to thrive in an ever-changing world. Intended for integration throughout all K–12 academic and technical content areas, the New Jersey Student Learning Standards- Career Readiness, Life Literacies, and Key Skills (NJSLS-CLKS) provides the framework for students to learn the concepts, skills, and practices essential to the successful navigation of career exploration and preparation, personal finances and digital literacy.
    - ***Climate Change:** The state of New Jersey has mandated instruction in, "Climate Change across all content areas, leveraging the passion students have shown for this critical issue and providing them opportunities to develop a deep understanding of the science behind the changes and to explore the solutions our world desperately needs."
5. ***Amistad Law: N.J.S.A. 18A 52:16A-88:***
    - The inclusion of lessons and resources/texts dealing with the African slave trade, slavery in America, the vestiges of slavery in this country and the contributions of African-Americans to our society will be implemented in English and Social Studies courses in accordance with state law: "Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students."
6. ***Holocaust Law: N.J.S.A. 18A 35-28:***

- The inclusion of lessons and resources/texts that enable pupils to identify and analyze applicable theories concerning human nature and behavior; to understand that genocide is a consequence of prejudice and discrimination; and to understand that issues of moral dilemma and conscience have a profound impact on life will be implemented in English and Social Studies courses in accordance with state law: "Every board of education shall include instruction on the Holocaust and genocides in an appropriate place in the curriculum of all elementary and secondary school pupils. The instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens."

7. ***LGBT and Disabilities Law: N.J.S.A. 18A:35-4.35:***
   - A transformative approach to the inclusion of lessons and resources/texts on the contributions and issues concerning the LGBTQ+ population and people with disabilities will be implemented across all core subjects in accordance with state law: "A board of education shall include instruction on the political, economic, and social contributions of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum of middle school and high school students as part of the district's implementation of the New Jersey Student Learning Standards (N.J.S.A.18A:35-4.36). A board of education shall have policies and procedures in place pertaining to the selection of instructional materials to implement the requirements of N.J.S.A. 18A:35-4.35."
8. ***Asian American and Pacific Islanders Legislation: N.J.S.A 4021/A6100:***
   - The inclusion of lessons and resources/texts on the history and contributions of Asian Americans and Pacific Islanders, will enable New Jersey's schools to provide a curriculum that reflects the diversity of our state. In accordance with state law: "A board of education shall include instruction on the history and contributions of Asian Americans and Pacific Islanders in an appropriate place in the curriculum of students in grades kindergarten through as part of the school district's implementation of the New Jersey Student Learning Standards in Social Studies."
9. Acquisition/development/refinement of the higher-order critical thinking skills aligned with the *Revised Bloom's Taxonomy of Cognitive Objectives*

Section III: Curriculum Modifications

The *Engineering I* curriculum is subject to case-by-case modifications to support/advance the needs of all students, including special education students, English language learners, gifted students and those at risk of school failure. These modifications are based on Individualized Learning Programs (IEPs), recommendations made by the district's English Language Learners (ELL) coordinator, feedback from members of the Intervention & Referral Services Team (*I&RS*) for at-risk students, and 504 Plans.

Coursework and assessments will be modified on an individual basis for students when necessary. Modifications may include but are not limited to those outlined in the Modifications/Accommodations for Technology and Design Courses chart.

Section IV: Preparation for Standardized Testing

Instruction in *Engineering I* is aligned with the requirements of state and national standardized assessments, including the *NJSLA*, the *ACT*, the *PSAT* and the *SAT*.

Section V: Curriculum Pacing Guide

Curriculum Pacing Guide	
Course Title: *Engineering I*	**Grade Level:** 9th-12th
Unit I: Introduction to Engineering	Week 1
Unit II: Civil Engineering	Week 2-5

Unit III: Mechanical Engineering	Weeks 6-9
Unit IV: Automobile Engineering	Weeks 10-13
Unit V: Aerospace Engineering	Weeks 14-17
Unit VI: Energy Engineering	Weeks 18-20

Section VI: Primary Texts and Year Long Instructional Resources

The following texts and instructional resources are employed in *Engineering I*:

- *Common Sense Education*
- *Google Classroom*
- *Youtube.com*
- *Teachengineering.org*

Section VII: Grading Formula and Assessment Modes

Marking period grades in *Engineering I* are determined via a percentage weighting model. The specific grading categories and weightings of each will be determined before the start of each academic year and will be published in the posted/distributed course syllabi.

Assessments in *Engineering I* vary greatly in format, and scope/content/skills assessed and alternative assessments, differentiation in assessments, and choice will be incorporated as appropriate. Preliminary assessments of each format will be used as benchmarks and summative assessments will be created/revised collaboratively each year and planned by members of the *Engineering I* instructional team to inform future learning and to measure student growth.

Section VIII: Unit Templates

The following unit templates have been established for the *Engineering I* curriculum by the *Engineering I* instructional team:

Unit I: Introduction to Engineering	
Unit Summary	
In this unit, students will become familiar with classroom procedures, course proficiencies, general rules and regulations as well as clean-up procedures for *Engineering I*. They will learn about the different types of Engineering that exist, as well as the seven steps in the Engineering Design process. Through the completion of this unit, they will understand how to properly research, design, build, and redesign a project.	
Standards/Core Ideas/Performance Expectations	

The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in *Engineering I:*
• *2020 New Jersey Student Learning Standards: Science*
  ○ HS-ETS1-1-4
• *2016 New Jersey Student Learning Standards: English Language Arts Companions for Grades 9-10*
  ○ Reading:
  ■ NJSLSA.R7, RST.9-10.3-10.4
  ○ Writing:
  ■ NJSLSA.W4, NJSLSA.W7, WHST.9-10.6-10.7, WHST.9-10.10
• *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  ○ 8.2.12.ED.1-2, 8.2.12.ED.4-5, 8.2.12.NT.1-2
• *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  ○ 9.2.12.CAP.6, 9.2.12.CAP.8, 9.4.12.CI.1-2, 9.4.12.CT.1-2, 9.4.12.DC.7, 9.4.12.TL.1, 9.4.12.TL.3-4	

Unit Essential Questions	**Unit Enduring Understandings**

• What are the student's classroom procedures, course proficiencies, general rules and regulations as well as clean-up procedures? • What are the different types of Engineering? • What are the seven steps in the Engineering Design Process? • How do you properly research, design, build, and redesign a project? • How is the design process used to plan and produce a desired result?	• Classroom procedures are essential to the smooth operation and safety of all students. • There are 5 different types of engineering. • The following seven steps are key in the Engineering Design Process regardless of how difficult the task: 1. Identify the need and constraints; 2. Research the problem; 3. Imagine possible solutions; 4. Plan by selecting a promising solution; 5. Create a prototype; 6. Test and evaluate the prototype; 7. Improve and redesign as needed. • Research is a critical component in engineering and generating a document of facts and sketches for a project. • The design process enables engineers to create projects varying in scope.

Evidence of Learning

Formative & Alternative Assessments:	**Benchmark & Summative Assessments:**	**Resources Needed:**

• Individual student check-ins with teacher
• Each step of the Engineering Design Process will be turned in:
  ○ Ask to identify the need and constraints;
  ○ Research the problem;
  ○ Imagine possible solutions;
  ○ Plan by selecting a promising solution;
  ○ Create a prototype;
  ○ Test and evaluate the prototype;
  ○ Improve and redesign as needed.
	• Engineering Design Process Assessment (Benchmark)	• Project materials
		• Engineering lab and tools

Unit II: Civil Engineering

Unit Summary

In this unit, students will become familiar with Civil Engineering. They will learn about how Civil Engineers help society and in what ways--namely how a Civil Engineer impacts the design, construction, and maintenance of infrastructure projects and systems including roads, buildings, bridges, tunnels, dams, etc. The major component of this unit will be the design, construction, and testing of a truss bridge. Through the completion of this unit, they will understand some of the challenges faced by Civil Engineers and reflect on the process for building a structure within particular parameters.

Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in *Engineering I:*

- *2020 New Jersey Student Learning Standards: Science*
  - HS-ETS1-1-4
- *2016 New Jersey Student Learning Standards: English Language Arts Companions for Grades 9-10*
  - Reading:
    - NJSLSA.R7, RST.9-10.3-10.4
  - Writing:
    - NJSLSA.W4, NJSLSA.W7, WHST.9-10.6-10.7, WHST.9-10.10
- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.2.12.ED.1-2, 8.2.12.ED.4-5, 8.2.12.NT.1-2
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  - 9.2.12.CAP.6, 9.2.12.CAP.8, 9.4.12.CI.1-2, 9.4.12.CT.1-2, 9.4.12.DC.7, 9.4.12.TL.1, 9.4.12.TL.3-4

Unit Essential Questions	Unit Enduring Understandings
• What does a Civil Engineer do? • What role does tension play in a truss bridge? • What role does compression play in a truss bridge? • What role does bracing play in a truss bridge? • What role do Truss Bridges play in modern society?	• There are three elements of a Civil Engineer's job. • Tension is caused by forces pulling on either side of a segment of a bridge. • Compression occurs when a segment of a bridge is pressed inward. • Bracing works to stabilize the main girders or pieces of the bridge. • There are many different examples of truss bridges and the positive and negative aspects of their use.

Evidence of Learning		
Formative & Alternative Assessments: ● Individual student check-ins with teacher ● Each step of the Engineering Design Process will be turned in: o Ask to identify the need and constraints; o Research the problem; o Imagine possible solutions; o Plan by selecting a promising solution; o Create a prototype; o Test and evaluate the prototype; o Improve and redesign as needed.	**Benchmark & Summative Assessments:** ● Bridge Project (Benchmark) and Competition	**Resources Needed:** ● Project materials ● Engineering lab and tools

Unit III: Mechanical Engineering
Unit Summary
In this unit, students will become familiar with Mechanical Engineering. They will learn about how Mechanical Engineers help society and in what ways. A mechanical engineer is concerned with combining physics and mathematical principles to design, build, and maintain mechanical systems. Though broad in scope, mechanical engineers deal with industrial equipment, engine systems, and other aspects of machinery. The major component of this unit will be the design, construction, and testing of a simple machine made up of pulleys, gears, incline planes, wheels, and axles. Through the completion of this unit, they will understand some of the challenges faced by Mechanical Engineers and be able to identify gear ratios.
Standards/Core Ideas/Performance Expectations
The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in *Engineering I:* ● *2020 New Jersey Student Learning Standards: Science* ○ HS-ETS1-1-4 ● *2016 New Jersey Student Learning Standards: English Language Arts Companions for Grades 9-10* ○ Reading: ■ NJSLSA.R7, RST.9-10.3-10.4 ○ Writing: ■ NJSLSA.W4, NJSLSA.W7, WHST.9-10.6-10.7, WHST.9-10.10 ● *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking* ○ 8.2.12.ED.1-2, 8.2.12.ED.4-5, 8.2.12.NT.1-2 ● *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills* ○ 9.2.12.CAP.6, 9.2.12.CAP.8, 9.4.12.CI.1-2, 9.4.12.CT.1-2, 9.4.12.DC.7, 9.4.12.TL.1, 9.4.12.TL.3-4

Unit Essential Questions	Unit Enduring Understandings
● What does a Mechanical Engineer do? ● What does a pulley do? ● What does an inclined plane do? ● What does a gear do? ● What does a wheel and axle do?	● There are three elements of a Mechanical Engineer's job. ● A pulley is an object that is used to change the direction or effort needed to raise an object. ● An inclined plane is a simple machine that is useful for reducing the effort needed to move an object at an angle. ● A gear is a rotating circular machine that has teeth (or cogs) that can work in gearboxes with other different-sized gears to create a gear ratio and mechanical advantage. ● A wheel and axle involves a shaft joined to a wheel or other circular device that will result in a mechanical advantage when engaged.

Evidence of Learning		
Formative & Alternative Assessments: ● Individual student check-ins with	**Benchmark & Summative Assessments:** ● Gear/Pulley Project	**Resources Needed:** ● Project materials ● Engineering lab and tools

teacher ● Each step of the Engineering Design Process will be turned in: o Ask to identify the need and constraints; o Research the problem; o Imagine possible solutions; o Plan by selecting a promising solution; o Create a prototype; o Test and evaluate the prototype; o Improve and redesign as needed.		

Unit IV: Automobile Engineering		
Unit Summary		
In this unit, students will become familiar with Automobile Engineering. They will learn about how Automobile Engineers help society and in what ways. Automobile engineers are part of a subset of mechanical engineering that focuses specifically on the manufacture of vehicles along with the components that make up the vehicle including energy and propulsion systems. The major component of this unit will be the design, construction, and testing of a DC-powered car and a Hovercraft. Through the completion of this unit, they will understand some of the challenges faced by Automobile Engineers such as power and balance.		
Standards/Core Ideas/Performance Expectations		
The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in *Engineering I:* ● *2020 New Jersey Student Learning Standards: Science* ○ HS-ETS1-1-4 ● *2016 New Jersey Student Learning Standards: English Language Arts Companions for Grades 9-10* ○ Reading: ■ NJSLSA.R7, RST.9-10.3-10.4 ○ Writing: ■ NJSLSA.W4, NJSLSA.W7, WHST.9-10.6-10.7, WHST.9-10.10 ● *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking* ○ 8.2.12.ED.1-2, 8.2.12.ED.4-5, 8.2.12.NT.1-2 ● *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills* ○ 9.2.12.CAP.6, 9.2.12.CAP.8, 9.4.12.CI.1-2, 9.4.12.CT.1-2, 9.4.12.DC.7, 9.4.12.TL.1, 9.4.12.TL.3-4		
Unit Essential Questions	**Unit Enduring Understandings**	
● What does an Automobile Engineer do? ● What does a DC motor do? ● How can a DC motor power a small vehicle? ● How does a hovercraft float? ● How does a hovercraft change direction?	● There are three key elements of an Automobile Engineer's job. ● A DC motor is an electric motor that converts direct current electrical energy into mechanical energy (electricity → motion). ● A DC motor can power a small vehicle efficiently. ● A hovercraft must produce a downward thrust to push itself up over the ground on a cushion of air. ● Different components such as a fin or rudder can be used to steer hovercraft behind its fan or other thrusters.	
Evidence of Learning		
Formative & Alternative Assessments: ● Individual student check-ins with teacher ● Each step of the Engineering Design Process will be turned in: o Ask to identify the need and constraints; o Research the problem; o Imagine possible solutions;	**Benchmark & Summative Assessments:** ● Hovercraft Project	**Resources Needed:** ● Project materials ● Engineering lab and tools

o Plan by selecting a promising solution; o Create a prototype; o Test and evaluate the prototype; o Improve and redesign as needed.		

Unit V: Aerospace Engineering
Unit Summary
In this unit, students will become familiar with Aerospace Engineering. They will learn about how Aerospace Engineers help society and in what ways. With a focus on industries including designing, building, research, and development for aerodynamically fit materials sent flying through the air (or space!) The major component of this unit will be the design, construction, and testing of a catapult. Through the completion of this unit, they will understand some of the challenges faced by Aerospace Engineers and be able to understand the terminology used in this industry.
Standards/Core Ideas/Performance Expectations
The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in *Engineering I:* ● *2020 New Jersey Student Learning Standards: Science* ○ HS-ETS1-1-4 ● *2016 New Jersey Student Learning Standards: English Language Arts Companions for Grades 9-10* ○ Reading: ■ NJSLSA.R7, RST.9-10.3-10.4 ○ Writing: ■ NJSLSA.W4, NJSLSA.W7, WHST.9-10.6-10.7, WHST.9-10.10 ● *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking* ○ 8.2.12.ED.1-2, 8.2.12.ED.4-5, 8.2.12.NT.1-2 ● *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills* ○ 9.2.12.CAP.6, 9.2.12.CAP.8, 9.4.12.CI.1-2, 9.4.12.CT.1-2, 9.4.12.DC.7, 9.4.12.TL.1, 9.4.12.TL.3-4

Unit Essential Questions	Unit Enduring Understandings
● What does an Aerospace Engineer do? ● What is needed to build a catapult? ● What is the optimal firing angle for a catapult? ● What design elements of a catapult can be applied to other projectiles?	● There are three key elements of an Aerospace Engineer's job. ● A catapult has standard parts that are replicable. ● A catapult can have endless firing angles; however, some are more optimal than others. ● Other projectiles, including rockets, use similar principles to catapults in terms of shape, propulsion and launch mechanisms.

Evidence of Learning		
Formative & Alternative Assessments: ● Individual student check-ins with teacher ● Each step of the Engineering Design Process will be turned in: o Ask to identify the need and constraints; o Research the problem; o Imagine possible solutions; o Plan by selecting a promising solution; o Create a prototype; o Test and evaluate the prototype; o Improve and redesign as needed.	**Benchmark & Summative Assessments:** ● Catapult Project	**Resources Needed:** ● Project materials ● Engineering lab and tools

Unit VI: Energy Engineering
Unit Summary

In this unit, students will become familiar with Energy Engineering. They will learn about how Energy Engineers help society and in what ways. The focus of Energy Engineers is to combine scientific fields of study with environmental engineering processes to increase efficiency, sustainability, and development of renewable sources of energy. The major component of this unit will be the design, construction, and testing of a solar panel beach fan. Through the completion of this unit, they will understand some of the challenges faced by Energy Engineers and be able to describe how a solar panel functions. They will also know the differences between traditional energy sources and alternative energy sources such as; solar, wind, tidal, hydroelectric, and biomass energy.

Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in *Engineering I:*

- *2020 New Jersey Student Learning Standards: Science*
  - HS-ETS1-1-4
- *2016 New Jersey Student Learning Standards: English Language Arts Companions for Grades 9-10*
  - Reading:
    - NJSLSA.R7, RST.9-10.3-10.4
  - Writing:
    - NJSLSA.W4, NJSLSA.W7, WHST.9-10.6-10.7, WHST.9-10.10
- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.2.12.ED.1-2, 8.2.12.ED.4-5, 8.2.12.NT.1-2
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  - 9.2.12.CAP.6, 9.2.12.CAP.8, 9.4.12.CI.1-2, 9.4.12.CT.1-2, 9.4.12.DC.7, 9.4.12.TL.1, 9.4.12.TL.3-4

Unit Essential Questions	Unit Enduring Understandings
● What does an Energy Engineer do? ● How does a solar panel function? ● How does wind energy work? ● How does tidal energy work? ● How does hydroelectric energy work? ● How does biomass energy work?	● There are three key elements of an Energy Engineer's job. ● Identifying parts of a solar panel is essential to understanding how they help to produce energy. ● Wind energy is energy captured from wind turning a turbine to generate electricity. ● Tidal energy is energy captured from the movement of the tides in waterways which turns a turbine to generate electricity. ● Hydroelectric energy relies on the movement of water from a higher height to a lower one, turning a turbine in the process. ● Biomass energy relates to a cycle of renewable organic material coming from plants and animals--chemical energy stored from the sun.

Evidence of Learning

Formative & Alternative Assessments:	Benchmark & Summative Assessments:	Resources Needed:
● Individual student check-ins with teacher ● Each step of the Engineering Design Process will be turned in: o Ask to identify the need and constraints; o Research the problem; o Imagine possible solutions; o Plan by selecting a promising solution; o Create a prototype; o Test and evaluate the prototype; o Improve and redesign as needed.	● Solar Panel Project	● Project materials ● Engineering lab and tools

Section IX: Unit Reflection

The *Engineering I* instructional team must confer upon the completion of each instructional unit in the *Engineering I* curriculum and rate the degrees to which the instructional units meet performance criteria established by the New Jersey Department of Education using the Unit Reflection Form. Completed unit reflection forms must be submitted to the Department Supervisor for approval upon completion of curriculum implementation with a complementing list of suggested modifications to the *Engineering I* curriculum.

Unit Reflection Form: *Engineering I*

Lesson Activities:	Strongly	Moderately	Weakly
Foster student use of technology as a tool to develop critical thinking, creativity and innovation skills;			
Are challenging and require higher order thinking and problem-solving skills;			
Allow for student choice;			
Provide scaffolding for acquiring targeted knowledge/skills;			
Integrate modern, global perspectives, especially those regarding diversity, genocide, global issues, and historical ones regarding racial relations;			
Integrate 21st century skills;			
Provide opportunities for interdisciplinary connection and transfer of knowledge and skills;			
Are varied to address different student learning styles and preferences;			
Are differentiated based on student needs;			
Are student-centered with teacher acting as a facilitator and co-learner during the teaching and learning process;			
Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives;			
Provide opportunities for student reflection and self-assessment;			
Provide data to inform and adjust instruction to better meet the varying needs of learners.			

Appendix

Writing Instruction and the RFH Community

Writing instruction should happen across the RFH Community. Writing across the curriculum is a philosophy that advances the belief that writing is a method of learning. Since all departments are committed to helping students learn, writing must be used as a methodology to advance student learning.

Each academic discipline has its own unique conventions, formats and structures. It is the responsibility of each department to agree upon domain-specific writing praxes, model them for students, and require them to utilize them on a consistent basis. Students must understand that acceptable writing in one domain may not be acceptable writing in another area. The development of domain-specific writing skills supports the overall development of the student writer because all writing is grounded in the writing situation: audience, context, purpose, subject, and writer. Representatives from the academic disciplines must share their domain-specific writing praxes with each other, identify intersections, and determine how to address perceived gaps that limit student learning.

Students must experience writing situations that help them learn how to think creatively and critically and communicate effectively in the academic disciplines. Writing instruction, regardless of the academic discipline, must always reinforce student understanding of the writing situation. When students experience writing situations, they must study examples of domain-specific writing in order to understand how writers communicate in discipline-related contexts. This does not mean information embedded in textbooks. Domain-specific writing is writing that is used to inform and influence readers as it draws them into an established circle of discourse. Students must use these non-fiction texts to develop the close reading skills that will shape their own writing. Focused engagement with domain-specific writing should not be limited to basic reading comprehension and topical understanding. It must also include the analysis of the writing situation that is represented in the text: audience, context, purpose, subject, and writer. The close reading of well-written texts—regardless of the domain—will show students the importance of writing mechanics, diction, and syntax. The development of close reading skills will also help the students grow in terms of their ability to construct and advance independent and original claims that are well-supported by evidence. Domain-specific writing is grounded in positioning of claims and the effective use of evidence.

The final written product is important; nevertheless, the learning that results in this production must not be devalued. The writing process is not limited to the basic steps of planning, drafting, revising, and editing/proofreading. It is a complex sequence of critical and creative thinking and writing that leads to the production of a text that provides evidence of learning and understanding. Students must ultimately develop the ability to self-assess the effectiveness of their writing as a representation of the writing situation. Without the use of models that evidence learning and understanding, students will not develop the ability to self-assess their own work—the true outcome of the writing process.

What types of writing situations should RFH students engage in?

RFH students should engage in writing situations across the curriculum that require them to:

- write to improve mechanical proficiency, diction usage, and syntactical sophistication
- write to narrate, describe, and reflect
- write to summarize and report
- write to classify and define
- write to explain how process leads to an outcome
- write to compare, contrast and evaluate
- write to speculate on cause and effect
- write to propose solutions and solve problems
- write to analyze

These writing situations should be positioned in a coordinated, developmental sequence that extends across the academic disciplines.

Upon Completion of Grade 12, RFH students must be ready to transition to the following writing situations:

- write to analyze
- write to persuade (argument)

The core foci of first-year college writing courses are analysis and argument. These courses orient the students to the demands and expectations of writing for the academic culture of college. At colleges/universities with carefully coordinated writing programs, students must demonstrate proficiency in analysis and argument before they transition to upper-level courses that require them to engage in the following writing situation:

- write to investigate (research)