SHEBOYGAN AREA
SCHOOL DISTRICT

NOTE: This meeting will be held in the Boardroom.

**Starting/ending times may vary*

Tuesday, October 14, 2025
Starting Time: 6:00 – 6:20 p.m.*
CHAIR: Ms. Robbins, Chair
MEMBERS: Ms. Tasche, Vice Chair
Ms. Wittstock
Ms. Hibl

(A quorum of the Board may be present)

The Curriculum and Instruction Committee meeting will be held in the Board of Education meeting room, 3330 Stahl Road, Sheboygan, Wisconsin on **Tuesday, October 14, 2025, at 6:00 p.m.** The following items will be presented for consideration at that time:

Please note that some Board members may be participating in this Board meeting via teleconference or other remote access technology. Members of the public who attend the meeting will be able to hear any open session dialogue between such members and the Board members present in the Boardroom.

REPORT TO THE CURRICULUM & INSTRUCTION COMMITTEE
AGENDA

2 Min. 1. **GUATEMALA 2026 FIELDTRIP – Ms. Rachel Ledezma** (Information/Action)

Administration recommends the approval of South High School students to travel to Antigua, Guatemala, April 26-May 2, 2026 to visit families in the community alongside social workers, volunteer in construction projects, and partake in cultural activities, as per Policy 2340.

2 Min. 2. **LUXEMBOURG 2026 FIELDTRIP – Ms. Rachel Ledezma** (Information/Action)

Administration recommends the approval of North High School students to travel to Clervaux, Luxembourg, June 10-19, 2026 to strengthen relationships (academically and culturally) with our sister school Lycée Edward Steichen, as per Policy 2340.

10 Min. 3. **SUMMER SCHOOL REPORT – Ms. Rachel Ledezma/Alexis Foerster** (Information/Discussion)

Administration will provide a summary of results for the 2024 summer school program.

5 Min. 4. **INTRODUCTION OF NEW COURSES – Ms. Rachel Ledezma/Ms. Kelly Blum** (Information/Possible Action)

Administration recommends the adoption of the following courses for the 2026-2027 school year:

- Forensic Science (South High School) Grades 10-12
- Microbiology (South High School) Grades 9-12
- Science Intern (South High School) Grades 11-12

EXTENDED TRAVEL, REGIONAL/NATIONAL COMPETITION, AND/OR INTERNATIONAL FIELD TRIP PRE-APPROVAL FORM

1. Name of Group: Sheboygan Rotary/Interact Guatemala
2. Date of Application: 9/16/2025
3. Person Making Application: Amanda Rammer
4. School: Sheboygan South High School

5. Proposed Event: Participate in an International Cultural Exchange
6. Destination: Antigua Guatemala
7. Dates of Travel: April 26-May 2, 2026
8. Purpose: Cultural Exchange/Rotary & Interact Project
9. # of students (estimate): 10
10. # of chaperones: 2

11. Is this field trip a regional/national competition? ☐ Yes ☒ No
12. If yes, what are the qualifying criteria for participation?

13. Estimated Costs
Use the appropriate worksheet to calculate the cost of the trip. Use the results from the worksheet to complete the section below. The worksheet must be submitted along with this form to the Assistant Superintendent Student & Instructional Services.

A. Total Cost of Trip

# of Students	10
Cost Per Student	2,780.00
Total for all Students	27,800.00

# of Chaperones	2
Cost Per Chaperone	2,780.00
Total for All Chaperones	5,560.00

Total Cost of Trip	33,360.00

B. Cost by Funding Source

Source			**Total**
Students	($ 2780.00	each	27,800.00
Chaperones	($ 2780.00	each	5,560.00
Student Group/Fundraising			
Grants			
Building Funds			
District/Central Admin Funds			
Other - specify here:			
Total Cost of Trip			33,360.00

Continued on the next page

14. Use the space below to answer the following questions. Do not submit additional pages. The space below will expand to fit your needs.

a.	What activities will the students be engaged in while on the trip? We will visit families in the community alongside a social worker, meet with students whose education is financially supported by the Sheboygan Rotary/Interact, volunteer in construction projects such as building a house, and take part in cultural activities.
b.	How will students demonstrate what they learned from this experience? (Please describe specific activities that will take place after the field trip.) Students are expected to give a presentation at the Sheboygan Rotary noon meeting about their experience, and to continue supporting the students' education both financially and through written letters..
c.	How will SASD staff members involved in the field trip use their experiences during this field trip to enhance their classroom activities? I will continue serving as the Interact Advisor and will support students in becoming actively involved in the clubs available at Sheboygan South High..
d.	Who will the chaperones be, and how were they selected? I have served as a co-leader for this trip over the past few years, and my husband, Scott, will be attending as a chaperone this year. Additionally, two other parents are also interested in being chaperones.

15. Verify that the appropriate documentation will be provided for this field trip.

a. The school's extended travel rules and a detailed itinerary will be provided to each student and parent/guardian before the trip. x Yes ___ No

b. Parents/guardians will review and complete the following forms, returning them to the school, before the trip takes place:

- Consent for Treatment of Student (fm 2340f2) x Yes ___ No
- Student Travel Notice and Consent form (fm2340gf4) x Yes ___ No
- The Parent/Legal Guardian Excursion Waiver form (applies only to trips outside the continental US) (fm2340gf2) x Yes ___ No
- Parental Consent to Travel outside the US x Yes ___ No

16. Route this form for approval. Follow the guidelines on the cover page of this form.

For Central Administration Use Only				
Signature	**Title**	**Recommended:**		**Comments**
		Yes	No	
Amanda Rammer	Advisor	X		Via email
Kevin Formolo	Principal	X		Via email
Rachel Ledezma	Asst Supt – S&I	X		Via email
	Superintendent	X		
	Board of Education			

8/27/13
New Form Number 9/18/14
Updated 8/12/2024

EXTENDED TRAVEL, REGIONAL/NATIONAL COMPETITION, AND/OR INTERNATIONAL FIELD TRIP PRE-APPROVAL FORM

1. Name of Group: Club Luxembourg (Club Lux)
2. Date of Application: September 23, 2025
3. Person Making Application: Erin Belongie, Dannielle Arneson
4. School: North High School

5. Proposed Event: Summer Excursion to Lycée Edward Steichen
6. Destination: Clervaux, Luxembourg
7. Dates of Travel: June 10-19, 2026
8. Purpose: To strengthen our relationship (academically and culturally) with our sister school, Lycée Edward Steichen.
9. # of students (estimate): 15
10. # of chaperones: 2

11. Is this field trip a regional/national competition? [ ] Yes [x] No
12. If yes, what are the qualifying criteria for participation?

13. Estimated Costs
Use the appropriate worksheet to calculate the cost of the trip. Use the results from the worksheet to complete the section below. The worksheet must be submitted along with this form to the Assistant Superintendent Student & Instructional Services.

A. Total Cost of Trip

# of Students	15
Cost Per Student	$2,420
Total for all Students	$36,300

# of Chaperones	2
Cost Per Chaperone	$4,520
Total for All Chaperones	$9,040

Total Cost of Trip	$45,340

B. Cost by Funding Source

Source			**Total**
Students	($ 2,420	each	$36,300
Chaperones	($ 4,520	each	$9,040
Student Group/Fundraising			
Grants			
Building Funds			
District/Central Admin Funds			
Other - specify here:			
Total Cost of Trip			$45,340

Continued on the next page

14. Use the space below to answer the following questions. Do not submit additional pages. The space below will expand to fit your needs.

a. What activities will the students be engaged in while on the trip?

Students and Chaperones are hosted by families in Luxembourg, so we are fully immersed in the culture during our stay. In addition to exploring sites in Luxembourg, our students will be attending classes and collaborating with students and host families at our sister school- Lycée Edward Steichen in Clervaux, Luxembourg.

Students in French will study myth and folklore in time and space across cultures, using the myth of the wolf and werewolf specifically. Students will research variations of the myth across countries and cultures and build a brief overview to contextualize the setting for the myth in various times and places. In their respective school groups, students will create creative, critical work based on the myth (poster, video, zine): they may choose to build this with the myth's evolution or specific snapshot. In the end, the students will each individually reflect on the project by discussing the similarities and differences they find in each other and each other's work regarding the analysis of the wolf/werewolf mythology and the overall experience of the project exchange.

English students are working on video projects regarding fallacy and propaganda. They are also working on the concept of "teamwork" based on Edward Steichen's famous Family of Man Exhibit, in connection to North High's "Better Together" motto. They will work via Padlet and other online communication tools. They will work face-to-face when we are in Luxembourg and when the Luxembourgers are here in Sheboygan.

Multilingual Learner students are working on a project similar to Flat Stanley. Students in Luxembourg are creating a character to send to us at North and North students will create a character (a flat Raider Vic) to send to her students at LESC. They'll include a completed journal of the character's adventures at North High School (and possibly within the Sheboygan community). Journal/Letter writing will boost language and communication skills- perfect for multilingual learners. Through sharing the characters, students will compare traditional American high school events with high school events in Luxembourg. These conversations will commence when the students are visiting the respective schools.

Global Events, Leadership- Chaperones and Luxembourgish teachers lead students through current and historical news articles. Luxembourgish and American students engage in cooperative discussions based on the articles. Some topics include: the importance of a global economy and global education, character, art, collaboration, leadership, dispelling stereotypes, and communication. The discussion culminates during the summer trip.

Art: Students will be collaborating to create artworks that represent the traditions, and style of current students in both Wisconsin and Luxembourg. Students at North will be partnered up with students at LESC. Students will communicate via messages, photos, and videos, to discuss designs and learn about each other along the way.

Education: Students spend several days in school attending classes and involving themselves in the lessons at Lycée Edward Steichen. Other projects are developing between the two schools in the subjects of English, French, and Art. New projects will be developed in the future in additional subject areas. Primary sources gathered through these exchanges are used to enrich class discussions. Teacher travelers take copious notes to share with project coordinators.

Educational excursions will be arranged to Vianden Castle, Clervaux Castle, the famous Family of Man Exhibit. Additionally, students may visit other historical and natural sites with their host families as the United States had a large presence in Luxembourg during WWII. This is a learning experience beyond the classroom walls, one that will be carried with the travelers for a lifetime.

b. How will students demonstrate what they learned from this experience? (Please

	describe specific activities that will take place after the field trip.) Students will be expected to learn about the Luxembourgish culture and education system. They will explore other topics with their Luxembourgish family and friends related to their areas of interest. They are expected to demonstrate their learnings and experiences through daily journaling while on the trip. Many innovative and culturally diverse ideas will fill their minds and their notebooks. Application of all the new ideas will be the true test as they lead discussions in class, use their experiences within their essays, and share with community groups throughout the spring. The students' ideas will trickle down to other North High students, perhaps adjust or even establish policy, help develop the vision of establishing more rigor within the North High community. Without a doubt, there is immeasurable value in seeing the students in action. This extends to when we return home too. When the students and advisers return from Luxembourg, they will share what they have learned with the classmates in the form of oral presentations, developing handouts, Google Slide presentations, video presentations, etc. Their individual learning experiences will appear in classwork and projects. With the implementation of Raider Time, travelers will lead presentations, share vlogs, and other media creations regarding their Luxembourgish school and excursion experience for their peers. Additionally, we plan to have students and chaperones attend Luxembourg Fest (Belgium, WI) in August of 2026 to share their experiences.
c.	How will SASD staff members involved in the field trip use their experiences during this field trip to enhance their classroom activities? Club Luxembourg did travel to our sister school in June 2025. They visited with collaborating teachers and students in Luxembourg, and it has already impacted our student learning, but there is more to be done. There will be an exchange of ideas, curriculum, and processes, that will enhance our teaching, our curriculum, and our student engagement for the better. We will learn and implement new methodologies and creative ways to help our students grow in our classrooms. This could range anywhere from classroom management styles, academic standards, student achievement, homework, discipline, tiering, and so much more are discussed and considered and much has been applied within the classroom. For these concepts to be spread to the faculty, time could be set aside during department or PLC meetings. Additionally, presentations could be done during Raider Times or staff meetings. Discussions must take place; teaching teachers & students and expanding knowledge is essential.
d.	Who will the chaperones be, and how were they selected? The chaperones will include current Language Arts teacher and Co-Advisor Mrs. Erin Belongie will be leading the trip. She was selected by former Principal, John Matczak (when he was still principal) as advisor because of her 10 years of experience leading a curricular exchange with France. She ran the French Connection for many years prior to it dwindling due to the Covid Pandemic. She is doing a collaborative project with a teacher at the school we are partnering with. Dannielle Arneson, North High Art teacher and Co-Advisor of the group will also be leading the trip. She was selected because of her co-leadership and she is doing a collaborative project with another art teacher at the school we are partnering with.

15. Verify that the appropriate documentation will be provided for this field trip.

a. The school's extended travel rules and a detailed itinerary will be provided to each student and parent/guardian before the trip. _x_ Yes ___ No

b. Parents/guardians will review and complete the following forms, returning them to the school, before the trip takes place:

- Consent for Treatment of Student (fm 2340f2) _x_ Yes ___ No
- Student Travel Notice and Consent form (fm2340gf4) _x_ Yes ___ No

- The Parent/Legal Guardian Excursion Waiver form (applies only to trips outside the continental US) (fm2340gf2) ___x___ Yes ____ No
- Parental Consent to Travel outside the US ___x___ Yes ____ No

16. Route this form for approval. Follow the guidelines on the cover page of this form.

For Central Administration Use Only				
Signature	**Title**	**Recommended:**		**Comments**
		Yes	No	
Erin Belongie/Dannielle Arneson	Advisor	x		Via email
Nic Collins/Dan Stengel	Principal	x		Via email
Rachel C. Ledeyer	Asst Supt – S&I	X		
	Superintendent	X		
	Board of Education	X		

8/27/13
New Form Number 9/18/14
Updated 8/12/2024

SHEBOYGAN AREA
SCHOOL DISTRICT

Summer School Board Report
October 2025

By: Lexi Foerster

Introduction

The **2025 Summer School Program** was designed to address five key program areas:

- **School readiness** for incoming students
- **Additional academic support** for students needing skill reinforcement
- **High school credit recovery** to ensure on-time graduation
- **High school credit advancement** to expand opportunities for motivated learners
- **Enrichment opportunities** that promote creativity, engagement, and exploration beyond the core curriculum

This report provides an overview of the program's structure and outcomes, summarizing objectives, student enrollment, highlights, and areas for continued improvement.

Program Overview (Year-to-Year Change)

Metric	2024	2025	Δ / Trend
Total Students	2,670	3,037	▲ +367 (+13.7%)
Resident Students	2,623	2,973	▲ +350 (+13.3%)
Non-Resident Students	47	64	▲ +17 (+36.2%)
Program Duration	6 weeks	6–7 weeks	≈ Same
Meal Participation	District-wide	District-wide	☑ Maintained
Grade Span	4K–12+	4K–12+	☑ Maintained

Overall Growth: The 2025 program served **367 more students**, a **13.7% increase** over 2024.
Resident Enrollment: Rose by **350 students**, reflecting strong local participation and increased accessibility.
Non-Resident Enrollment: Up **36%**, showing wider interest in SASD's summer offerings.
Equity Maintained: Free meals continued across all sites, ensuring consistent support for every participating student.

Overview of Classes Offered

School Readiness: “Get Ready for 4K”

- Prepares students entering 4K by introducing school routines, building social skills, and helping them become comfortable in the Early Learning Center environment.

Summer School Academics

- **Grades K–6 (ELA/Math)**
  - Maintains reading, writing, and math skills through small-group instruction and interactive lessons designed to keep students engaged over the summer.
- **Grades 6–8 (ELA/Math)**
  - Strengthens foundational reading and math skills using hands-on learning, field experiences, and collaborative projects that make academics enjoyable and relevant.

High School Credit Recovery

- Hosted at North and South High Schools, this program provides students the opportunity to recover credits and stay on track for graduation. A self-paced option at Central High School offers additional flexibility for learners.

High School Credit Advancement

- Through Warriner High School’s Summer Advancement Program in partnership with the Wisconsin Virtual Academy (WVA), students may enroll in online coursework to earn additional credits or explore advanced subjects.

Overview of Classes Offered

Enrichment Opportunities

- **Elementary, Middle, and High School Enrichment:**
  - Offered in collaboration with the **SASD Community Recreation Department**, these sessions allow students to explore new interests and develop creative, athletic, or leadership skills.
- **Music Programs:**
  - Middle and high school students participated in band and orchestra opportunities that culminated in a final summer concert performance.
- **Fitness, Speed, and Conditioning:**
  - Classes at both North and South High Schools promote physical wellness and athletic development for high school athletes.

Celebrations & Areas of Improvement

CELEBRATIONS:

- Positive Climate and Collaboration
- Student Engagement and Learning
- Smooth Operations and Clear Expectations
- Commitment to Return

AREAS OF IMPROVEMENT:

- Scheduling and Logistics
- Staffing and Student Support
- Curriculum and Pacing
- Communication and Attendance

Next Steps

1. Discuss ways to provide structured pre-program training and planning time for teachers and educational assistants.
2. Continue improving communication systems between families, sites, and central administration.
3. Maintain strong enrichment offerings and student engagement opportunities that contribute to the positive climate staff value.
4. Plan for site locations, transportation, and nutrition for the 2026 summer program.
5. Connect with district staff members regarding new enrichment opportunities for students within SASD.
6. Collaborate with the SASD Recreation Department as planning begins for Summer 2026.

Conclusion

The 2025 Summer School Program provided meaningful learning and enrichment experiences for more than 3,000 students across 18 sites. Staff collaboration, strong student engagement, and family support were key factors in this year's success.

Key Takeaways:

- Increased participation and expanded access for all learners
- Strong staff teamwork and positive student engagement
- Continued commitment to equity and community partnerships

Looking Ahead:
SASD will build on these successes by refining logistics, enhancing communication, and strengthening staff supports to ensure Summer School 2026 offers even greater impact for students and families.

Questions

Contact: Lexi Foerster, SASD Summer School Coordinator

Course Addition/Revision Recommendation Form **2220 F1** C&I Attachment #4
Student and Instructional Services
Sheboygan Area School District

Overview:

Forensic Science

As required by SASD policy 2220 (Adoption of Courses of Study), the School Board must approve major changes in the focus of a course or the addition of new courses being offered. Major changes and additions to course offerings are critical processes. They affect student learning opportunities, staffing, budgets, and other related factors.

To ensure communication and to facilitate the approval process, the following procedures and timelines are required for all offered courses*. As deemed necessary, the Assistant Superintendent of Student and Instructional Services may modify the procedures and timelines to meet student needs.

* *On-line courses from the Wisconsin E-School Network, K-12 Learning, and Compass Learning are pre-approved. The approval process must be used for all other on-line courses.*

Procedures:

Step 1: Department chairpersons, teachers, principals, and/or S & I department staff assess needs for major course revisions and additions.

Step 2: Notify S&I as soon as work begins on a course addition/revision. (Email Pam Warriner; she will notify appropriate S&I coordinators and staff.)

Step 3: Department staff gather proposals and propose recommendations. The *Course Addition/Revision Recommendation Form* must be completed by department chairs or by their designee.

Step 4: Department chair(s) email the form, along with a statement indicating their approval, to building principal(s).

Step 5: Building principal(s) review form and email their approval, along with the form, to S&I. (Email Pam Warriner, who will route form to appropriate S&I coordinators and Assistant Superintendent for review and signatures.)

Step 7: Recommendation for course approval or course revision is presented to the Board of Education for approval.

Timelines:

- Course Addition/Revisions that are received and approved **by November 1** will appear in the Course Description Guide **and** in Career Cruising for the following academic year.

- Course Additions/Revisions that are received and approved **by December 15** will only appear in Career Cruising for the following academic year. They will be added to the Course Description Guide the next time the guide is reprinted. The Course Description Guide is printed in November each year.

Course Addition/Revision Recommendation Form **2220 F1**
Student and Instructional Services
Sheboygan Area School District

Department:	Science	Course No:	
Course Title:	Forensic Science	# Credits:	0.5
Curricular Area:	Science		
Grade Level(s):	10-12		

Course Length:	X	One Semester			Year Long		
Course Type:		Basic	x	Regular		Honors	
Offered at:		North Only	X	South Only		North & South	

Course will first be offered for the 2026-2027 school year.

Check One:

	Course Revision (No changes in length of course but major content revisions made)
X	Course Addition (New course)

Please address the following in paragraph form in the space below. Please do not submit additional documents unless specified. The space below will expand as needed.

A	**Entrance Requirements (Any pre-requisite courses or other admission requirements):** Junior or Senior standing, 10th grade with teacher recommendation Must have successfully completed 1 year of high school level science
B	**Intended Student Grouping (Indication of ability level or other characteristics of students expected in the course):** Students interested in Forensic Science and/or the application of science in criminal justice.
C	**Course Justification (Reasons why the course needs to be revised or is needed. Address student needs, societal expectations and/or legal requirements):**

	Currently, South does not offer a forensic science course that primarily focus on this subject matter. The number of semester science courses available is limited. It is a building/department initiative to provide more learning science course opportunities for a diverse population, not just college track students.
D	**Course Description (A short summary of the course that can be used to explain it to students, parents, staff, and public – 75 words max.):** Uncover the science behind solving crimes in this hands-on, interactive course! You'll explore real-world forensic techniques like DNA analysis, fingerprinting, blood and hair analysis, arson investigation, ballistics, and more. Strengthen your skills in observation, problem-solving, and logical reasoning while analyzing evidence and drawing conclusions. From labs and video case studies to projects and research, each activity puts you in the role of a crime scene investigator. Discover how science helps crack the case!
E	**Intended Learning Objective(s) (List of major learning objectives for students in this course):** 1. Understand the scientific principles and investigative techniques used in forensic science to analyze physical and biological evidence. 2. Apply observation, critical thinking, and problem-solving skills to reconstruct crime scenes and draw evidence-based conclusions. 3. Analyze biological evidence such as hair, blood, and DNA to identify individuals and determine their connection to a crime scene. 4. Compare and classify fingerprint patterns and use minutiae analysis to match prints to potential suspects. 5. Evaluate the reliability, limitations, and ethical implications of forensic evidence in the criminal justice system. 6. Communicate findings from forensic investigations using appropriate scientific language, documentation, and presentation techniques.
F	Course Content Scope and Sequence (An outline and proposed timeline of what will be taught in the course; ***outline and proposed timeline can be submitted as a separate document***):

Weeks	Topics	Readings
1-2	**Foundations of Forensic Science** • First Day Activities & Class Procedures (Day 1) • Lab Safety Rules & Equipment Overview Introduction to Microscopes (shorten to ~120 mins) • Observation & Deductive Reasoning Skills **Eyewitnesses, Ethics & the Innocence Project** • Eyewitness Testimony • Deductive Reasoning (wrap up if needed) • The Innocence Project • Introduction to Evidence & Investigative Process	Ch 1. Forensic Science and Observation Ch 2. Crime Scene Investigation and Evidence Collection Death's acre chapter 14

	3-4	**Investigative Processes & Types of Evidence** • Finish Investigative Process (streamline total time to 180–200 mins) • Types of Evidence • Sketching & Searching the Crime Scene **Documenting and Handling Evidence** • Photographing the Crime Scene • Evidence Collection & Chain of Custody • Crime Scene to Courtroom	Ch. 2. Crime Scene Investigation and Evidence Collection 10. Handwriting Analysis, Forgery, and Counterfeiting Death's acre chapter 12
	5-6	**Historical & Legal Foundations of Forensics** • History of Forensics (trim to 180 mins, spread over 2 days) • Case studies connecting to court and wrongful conviction • Begin review activities embedded in daily lessons **Application & Assessment** • Unit Review & Assessment	Death's acre chapter 9, 15
	7-8	**Hair & Fiber Analysis** • Unit Introduction + Intro to Hair Analysis • Hair in Forensics + Hair Investigation • Hair Review & Assessment • Intro to Fiber Analysis + Fiber in Forensics (Part 1) • Fiber in Forensics (Part 2) + Review • Fiber Assessment **Fingerprint Analysis** • Intro to Fingerprints + Types of Fingerprints • Making Prints Visible + Lifting Techniques • Using Fingerprints to Solve Crimes • Fingerprint Lab Practice + Review • Fingerprint Assessment • Catch-up / Intro to DNA Fingerprinting (if ahead)	Ch. 3. Hair Analysis Ch. 4. Fiber Analysis Ch. 6. Fingerprint Analysis
	9-10	**DNA in Forensics** • Introduction to DNA Fingerprinting • DNA in Forensics • Gel Electrophoresis Lab • DNA Extraction Lab • DNA Case Study • DNA Review & Assessment **Blood Spatter Analysis** • Introduction to Blood Spatter • Blood Typing	Ch. 7. DNA Profiling Ch. 8. Blood and Blood Spatter

		• Passive Blood Stains • Analyzing Blood Stains & Angle Calculations • Comparative Pattern Lab • Blood Spatter Review & Assessment	
	11-12	**Ballistics & Arson Investigation** • Introduction to Ballistics • Ballistics Case Studies and Lab Activities • Ballistics in Forensics • Ballistics Review & Assessment • Introduction to Arson • Arson as Evidence • Arson Review & Assessment **Final Review, Application, and Exam** • Full Unit Review: Evidence Types & Techniques • Review Continued: Labs, Patterns, and Case Study Discussions • Practice Case: Applying Multiple Forensic Techniques • Mock Investigation or Group Project • Final Exam • Reflection, Extensions, or Makeup Work	Ch. 18. Firearms and Ballistics Ch. 15. Glass Evidence Ch. 16. Casts and Impressions Ch. 17. Tool Marks Stiff chapter 6: The Cadaver who Joined the army
	13-14	**Forensic Toxicology** • Introduction to Toxicology • Drug Schedules and Controlled Substances • Toxicology and Forensics • Alcohol and Its Effects on the Human Body • Toxicology Review & Assessment **Death & the Human Body** • Introduction to Death & What is Death? • Stages of Decomposition • The Body Farm Case Study • Livor, Rigor, and Algor Mortis (Time of Death) • Death Review & Assessment	Ch. 9. Forensic Toxicology Ch. 12. Death: Manner, Mechanism, Cause Stiff chapter 3: Life After Death
	15-16	**The Autopsy** • Introduction to Autopsy Procedures • Fetal Pig Dissection (Autopsy Lab – begins) • Continue Autopsy Lab (multiple days) • Autopsy Analysis & Reflection **Entomology** • Introduction to Entomology • Insects & Estimating Time of Death • Entomology Lab or Simulation • Entomology Review & Assessment • Introduction to Forensic Anthropology	Ch. 11. Forensic Entomology Ch. 13. Soil Examination Death's acre chapters 5-8

	17-18	**Forensic Anthropology** • The Human Skull • The Pelvic Bone • Long Bones & The Human Body • Calculating Height from Bones • Anthropology Review & Assessment **Wrap-Up & Culminating Activities** • Unit Review • Unit Exam • Culminating Project (Forensic Case Reconstruction or Presentation) • Project Work & Presentations • Final Reflections or Extension Activities	Ch. 14. Forensic Anthropology Death's Acre Chapters 1-4, 20

G **Instructional Resources (A list of instructional resources that will be used during the course – i.e. textbooks, on-line resources, community resources, etc.):**

Textbook: Forensic Science: Fundamentals & Investigations
Class set: 30 x $139 = ~$4170 (pending quote, the cost may be lower)
Teacher edition/resources:

Book studies:
Stiff: The Curious Lives of Human Cadavers by Mary Roach
Class set 30 x ~$17 = $510

Death's Acre: Inside the Legendary Forensic Lab the Body Farm Where the Dead Do Tell Tales by Dr. Bill Bass and Jon Jefferson
Class set 30 x ~$20 = $600

1. Labs/Activities:
    a. See section I

H **Student Assessment Plan (What standards and criteria will be used to evaluate student attainment of the learning objectives?):**

Students in this Forensic Science course will develop knowledge in the core disciplinary ideas described in the Next Generation Science Standards (NGSS) including science as inquiry. The course will introduce students to the scientific methodologies used in forensic investigations. The objectives of this course are to apply the Next Generation Science Standards (NGSS) Crosscutting Concepts that bridge disciplinary boundaries, uniting core ideas throughout the fields of science and engineering.

Unit 1:
Crosscutting Concepts:

- Patterns: Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them.
- Cause and Effect: Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.
- Scale, Proportion and Quantity: In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change.
- Systems and Models: A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.
- Structure and Function: The way an object is shaped or structured determines many of its properties and functions.
- Stability and Change: For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.

Science and Engineering Practices:

- HS-ETS1-2: Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
- HS-ETS1-3: Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
- HS-ETS1-1: Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
- HS-ETS1-4: Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

- CCSS.ELA-LITERACY.RST.11-12.1
  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.
- CCSS.ELA-LITERACY.RST.11-12.2
  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.
- CCSS.ELA-LITERACY.RST.11-12.3
  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.
- CCSS.ELA-LITERACY.RST.11-12.7
  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.
- CCSS.ELA-LITERACY.RST.11-12.8
  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.

- CCSS.ELA-LITERACY.RST.11-12.9
  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.
- CCSS.ELA-LITERACY.WHST.11-12.1.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.
- CCSS.ELA-LITERACY.WHST.11-12.1.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.
- CCSS.ELA-LITERACY.WHST.11-12.9
  Draw evidence from informational texts to support analysis, reflection, and research.

Unit 2:

Crosscutting Concepts:

- Patterns: Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them.
- Cause and Effect: Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.
- Scale, Proportion and Quantity: In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change.
- Systems and Models: A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.
- Structure and Function: The way an object is shaped or structured determines many of its properties and functions.
- Stability and Change: For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.

Science and Engineering Practices:

- HS-ETS1-2: Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
- HS-ETS1-3: Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
- HS-ETS1-1: Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
- HS-ETS1-4: Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

- **HS-LS1-1:** Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life through systems of specialized cells. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. *Assessment does not include the phases of meiosis or the biochemical mechanism of specific steps in the process.*
- **HS-PS1-2:** Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties. *Examples of chemical reactions could include the reaction of sodium and chlorine, of carbon and oxygen, or of carbon and hydrogen. Assessment is limited to chemical reactions involving main group elements and combustion reactions.*
- **HS-PS2-1:** Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration. *Assessment is limited to one-dimensional motion and to macroscopic objects moving at non-relativistic speeds. Examples of data could include tables or graphs of position or velocity as a function of time for objects subject to a net unbalanced force, such as a falling object, an object sliding down a ramp, or a moving object being pulled by a constant force.*
- **HS-PS2-4:** Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects. *Emphasis is on both quantitative and conceptual descriptions of gravitational and electric fields. Assessment is limited to systems with two objects*
- **HS-PS4-2:** Evaluate questions about the advantages of using digital transmission and storage of information. *Examples of advantages could include that digital information is stable because it can be stored reliably in computer memory, transferred easily, and copied and shared rapidly. Disadvantages could include issues of easy deletion, security, and theft.*
- **HS-PS4-5:** Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy. *Examples could include solar cells capturing light and converting it to electricity; medical imaging; and communications technology. Assessments are limited to qualitative information. Assessments do not include band theory.*
- CCSS.ELA-LITERACY.RST.11-12.1
  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.
- CCSS.ELA-LITERACY.RST.11-12.2
  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.
- CCSS.ELA-LITERACY.RST.11-12.3
  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.
- CCSS.ELA-LITERACY.RST.11-12.7

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.

- CCSS.ELA-LITERACY.RST.11-12.8
  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.
- CCSS.ELA-LITERACY.RST.11-12.9
  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.
- CCSS.ELA-LITERACY.WHST.11-12.1.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.
- CCSS.ELA-LITERACY.WHST.11-12.1.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.
- CCSS.ELA-LITERACY.WHST.11-12.9
  Draw evidence from informational texts to support analysis, reflection, and research.

Crosscutting Concepts:

- Patterns: Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them.
- Cause and Effect: Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.
- Scale, Proportion and Quantity: In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between different quantities as scales change.
- Systems and Models: A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.
- Structure and Function: The way an object is shaped or structured determines many of its properties and functions.
- Stability and Change: For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.

Science and Engineering Practices:

- HS-ETS1-2: Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
- HS-ETS1-3: Evaluate a solution to a complex real-world problem based on prioritized criteria

and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

- HS-ETS1-1: Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
- HS-ETS1-4: Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.
  - **HS-LS4-1:** Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.
  - **HS-PS1-2:** Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.
  - **HS-LS1-2:** Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. *Emphasis is on functions at the organism system level such as nutrient uptake, water delivery, and organism movement in response to neural stimuli. An example of an interacting system could be an artery depending on the proper function of elastic tissue and smooth muscle to regulate and deliver the proper amount of blood within the circulatory system.*
  - **HS-LS1-3:** Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. *Examples of investigations could include heart rate response to exercise, stomate response to moisture and temperature, and root development in response to water levels.*
  - **HS-LS1-7:** Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed, resulting in a net transfer of energy.
  - **HS-PS1-5:** Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.
  - **HS-PS3-1:** Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.

- CCSS.ELA-LITERACY.RST.11-12.1
  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.
- CCSS.ELA-LITERACY.RST.11-12.2
  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.

	• CCSS.ELA-LITERACY.RST.11-12.3 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. • CCSS.ELA-LITERACY.RST.11-12.7 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. • CCSS.ELA-LITERACY.RST.11-12.8 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. • CCSS.ELA-LITERACY.RST.11-12.9 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. • CCSS.ELA-LITERACY.WHST.11-12.1.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. • CCSS.ELA-LITERACY.WHST.11-12.1.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. • CCSS.ELA-LITERACY.WHST.11-12.9 Draw evidence from informational texts to support analysis, reflection, and research. Students will take quizzes and tests, as well as a final exam to assess their knowledge of the outcomes. Additionally, students will perform lab activities and projects that will assess their knowledge.
I	**Costs (What are the costs associated with the changes or implementation of the new course? – i.e. instructional resources, equipment, necessary professional development, room modifications, etc.):** **Equipment/Lab Materials: (Total $3933, most of the materials are start up expenses)** Most materials/kits are purchased through Flinn 1. Magnifying glass (2 sets): ~$30 2. Ink stamp pads (10): ~$70 3. Magnetic fingerprinting powder (3): ~$51 4. Fingerprinting wand, magnetic (3): ~$130 5. 40pcs of Glass Serological Test Tubes: ~$27 6. Chart paper: ~$240 7. Gunshot residue-forensics demonstration kit: ~$50

8. Understanding bullets set; ~$28
9. Bloodstains at the crime scene-Super value laboratory kit: ~$117
10. Forensic glow-blood system demonstration kit: ~$26
11. Bloodstain pattern analysis-forensic laboratory kit: ~$45
12. Simulated blood, 500mL x 3: ~$102
13. Presumptive blood test-forensic demonstration kit: ~$29
14. DNA fingerprinting-electrophoresis at work-super value kit: ~$68
15. DNA Forensics-super value laboratory kit: ~$276
16. DNA paternity testing-student laboratory kit: ~$132
17. Document analysis-forensic investigation laboratory kit: ~$107
18. Analysis of over-the-counter drugs- student laboratory kit: ~$70
19. Identification of unknown substance 1- forensic laboratory kit: ~$109
20. Identification of unknown substance 2- forensic laboratory kit: ~$146
21. Ultraviolet lamp, short wave: ~$147
22. Of maggots and murder- forensic entomology laboratory kit: ~$80
23. Forensics of fibers-student laboratory kit:~$41
24. Narc lab: a simulation: $~60
25. Crime scene 2: Kidnapped kit!: ~$78
26. The coroner's report-urine and blood analysis super value laboratory kit: ~$70
27. Crime scene: A forensics investigation kit: ~$100
28. Mr. Mathematics Mysterious murder kit: ~$89
29. Soil analysis-forensic laboratory kit: ~$158
30. The Forensic Slide set: ~$58
31. Glass analysis principles-forensic laboratory kit: ~$46
32. Forensic supply kit: ~$129
33. Flinn fingerprinting: ~$71
34. Inkless fingerprinting: kit: ~$59
35. Fuming Fingerprint forensics:-student laboratory kit: ~$60
36. Flinn six-gel electrophoresis apparatus: ~$393
37. Dual power supply: ~$300
38. Needle tip disposable pipette: ~$60
39. Electrophoresis reagent package: ~$81

Textbook ~$4,170
Supplies ~$3,933
Total $8,103

Reviewed By	Signature	Date	Approval – Y/N
Department Chairperson		9/29/25	Y
Building Principal(s)		9/29/25	Y
Curriculum Area Director/Coordinator of Instructional Services		9/29/25	Y
Asst. Supt. of Student & Instructional Services	Ruth C. Leden	9/29/2025	

Course Addition/Revision Recommendation Form **2220 F1**
Student and Instructional Services
Sheboygan Area School District

Course Description Guide the next time the guide is reprinted. The Course Description Guide is printed in November each year.

Department: Science Course No: _____

Course Title: Microbiology # Credits: 0.5

Curricular Area: Life Sciences

Grade Level(s): 9-12

Course Length: x One Semester _____ Year Long
Course Type: _____ Basic x Regular _____ Honors
Offered at: _____ North Only x South Only _____ North & South
Course will first be offered for the 2026-2027 school year.

Check One:
_____ Course Revision (No changes in length of course but major content revisions made)
x Course Addition (New course)

Please address the following in paragraph form in the space below. Please do not submit additional documents unless specified. The space below will expand as needed.

A.	Entrance Requirements (Any pre-requisite courses or other admission requirements): Concurrent enrollment in Biology 1 or Biology 2, or have previously passed Biology 1 and Biology 2.
B.	Intended Student Grouping (Indication of ability level or other characteristics of students expected in the course): All ability levels, encouraged for students seeking to go into the medical field, or biological sciences post high school.
C.	Course Justification (Reasons why the course needs to be revised or is needed. Address student needs, societal expectations and/or legal requirements): With South stepping away from the Project Lead The Way (PLTW) medical pathway classes this course would fill the need of an introductory course into our other medical classes. However, it would also fill the need for students seeking to take a non-college level science elective that is in the life sciences field. As it is right now the only other course that fills that need is plant biology.

	Additionally understanding what microbes are and how they work can be applied to a wide range of careers beyond science. Fields such as agriculture, culinary arts, sanitation, manufacturing (especially for foods like meat and cheese products), and more. This class would provide the foundational knowledge that students would need when entering these types of careers.
D.	Course Description (A short summary of the course that can be used to explain it to students, parents, staff, and public – 75 words max.): This course will provide students the opportunity to dive into the miniscule world of microbes. Students will master the basics of aseptic technique, bacterial culturing, and microscopy. With a hands-on lab approach to teaching and learning students will engage in several case studies that cover introductory topics in microbiology such as pathogenic microbes, antibiotic resistance, extremophiles, and more. This course provides a strong foundation for advanced biology and biomedical pathways.
E.	Intended Learning Objective(s) (List of major learning objectives for students in this course): 1. Students will be able to demonstrate safe, aseptic lab technique used to grow, handle, and study microorganisms 2. Students will be able to explain how bacterial infections work, and the immune system's response to these infections 3. Students will be able to compare and contrast the biological diversity that exists among micro-organisms 4. Students will be able to explore careers connected to and involved with microbiology

F.	Course Content Scope and Sequence (An outline and proposed timeline of what will be taught in the course; ***outline and proposed timeline can be submitted as a separate document***):
	
	Unit 1: Aseptic Technique & Lab Safety (~2-3 weeks)
	• **Focus Organism:** *Micrococcus luteus*
	• **Key Topics:**
	  ○ Biosafety & aseptic technique
	  ○ Microbial growth conditions
	  ○ Colony morphology & staining basics
	• **Case Study:** Tracing a contamination outbreak to poor lab technique
	• **Lab Activities:**
	  ○ Microscopy and Gram staining
	  ○ Streak plating and isolation
	• **NGSS Connections:** HS-LS1-1, HS-LS1-2, Science & Engineering Practices (Planning Investigations, Analyzing Data)

Unit 2: Pathogenic Microbes (~3 weeks)

- **Focus Organism:** *Staphylococcus epidermidis* (safe classroom strain)
- **Key Topics:**
  - Pathogen vs. normal flora
  - Virulence factors and host interactions
  - Disease transmission pathways
- **Case Study:** Outbreak of a hospital-acquired infection
- **Lab Activities:**
  - Growth on selective/differential media (MSA)
  - Simulated disease transmission experiment
- **NGSS Connections:** HS-LS2-8, HS-LS1-2, HS-LS1-3

Unit 3: Antibiotic Resistance (~3-4 weeks)

- **Focus Organism:** *Escherichia coli* K-12 (non-pathogenic)
- **Key Topics:**
  - Mechanisms of antibiotic action
  - Development of resistance
  - Importance of responsible antibiotic use
- **Case Study:** Resistant infections linked to overuse of antibiotics
- **Lab Activities:**
  - Kirby-Bauer disk diffusion assay
  - Data analysis of resistance trends
- **NGSS Connections:** HS-LS4-4, HS-LS4-5, HS-LS1-3

Unit 4: Non-Pathogenic & Beneficial Microbes (~3 weeks)

- **Focus Organism:** *Bacillus subtilis*
- **Key Topics:**
  - Microbes in food production and biotechnology
  - Symbiosis with humans and the environment
  - Applications in industry and agriculture
- **Case Study:** Probiotics in digestive health
- **Lab Activities:**
  - Testing enzymatic activity (amylase, catalase)
  - Yogurt/fermentation demonstration
- **NGSS Connections:** HS-LS2-6, HS-ETS1-2, HS-ETS1-3

Unit 5: Extremophiles & Microbial Diversity (~3 Weeks)

- **Focus Organism (Case Study):** *Deinococcus radiodurans* (radiation resistance, not cultured in class)
- **Focus Organism (Lab):** *Halobacterium salinarum* (halophilic archaeon)
- **Key Topics:**
  - Extremophile adaptations (radiation, salt, heat, pH)
  - Microbes in astrobiology
  - Limits of life and biotechnology applications
- **Case Study:** Survival of microbes in space missions
- **Lab Activities:**

	○ Culturing halophiles in salt-rich medium ○ Observing colony pigmentation and growth requirements • **NGSS Connections:** HS-LS2-6, HS-ESS2-7, HS-ETS1-1 **Capstone Project (~2-3 Weeks)** Students will engage in an independent study project focused on either a specific microbe, or class of microbes. They will create a professional report, and presentation on key aspects of their selected microbe, such as environmental niche, metabolism, identification characteristics, cell morphology etc....
G.	Instructional Resources (A list of instructional resources that will be used during the course – i.e. textbooks, on-line resources, community resources, etc.): • Various online sources such as WebMD, American Society for Microbiology, etc... • Guest speakers from local healthcare, agricultural, and manufacturing industries may be included
H.	Student Assessment Plan (What standards and criteria will be used to evaluate student attainment of the learning objectives?): Student work will be divided into materials used to learn (developmental activities), opportunities to check student understanding (formative assessments), and assessment of key concepts (summative assessments). Each assessment (formative and summative) will be based on NGSS standards for the particular unit (see scope and sequence above). Student attainment of these standards will be determined using a 5-point rubric using NGSS criteria as a guide.
I.	Costs (What are the costs associated with the changes or implementation of the new course? – i.e. instructional resources, equipment, necessary professional development, room modifications, etc.): • Equipment: • Autoclave: Carolina Saniclave: ~$1,200

Reviewed By	Signature	Date	Approval – Y/N
Department Chairperson	Michael April	9/29/25	Y
Building Principal(s)	Kevin Formolo	9/29/25	Y
Coord. of Instructional Services	Kelly Blum	9/29/25	Y
Asst. Supt. of Student & Instructional Services	Rachel Ledezma	9/29/25	Y

Course Addition/Revision Recommendation Form **2220 F1**
Student and Instructional Services
Sheboygan Area School District

Overview:

Science Intern

As required by SASD policy 2220 (Adoption of Courses of Study), the School Board must approve major changes in the focus of a course or the addition of new courses being offered. Major changes and additions to course offerings are critical processes. They affect student learning opportunities, staffing, budgets, and other related factors.

To ensure communication and to facilitate the approval process, the following procedures and timelines are required for all offered courses*. As deemed necessary, the Assistant Superintendent of Student and Instructional Services may modify the procedures and timelines to meet student needs.

* *On-line courses from the Wisconsin E-School Network, K-12 Learning, and Compass Learning are pre-approved. The approval process must be used for all other on-line courses.*

Procedures:

Step 1: Department chairpersons, teachers, principals, and/or S & I department staff assess needs for major course revisions and additions.

Step 2: Notify S&I as soon as work begins on a course addition/revision. (Email Pam Warriner; she will notify appropriate S&I coordinators and staff.)

Step 3: Department staff gather proposals and propose recommendations. The *Course Addition/Revision Recommendation Form* must be completed by department chairs or by their designee.

Step 4: Department chair(s) email the form, along with a statement indicating their approval, to building principal(s).

Step 5: Building principal(s) review form and email their approval, along with the form, to S&I. (Email Pam Warriner, who will route form to appropriate S&I coordinators and Assistant Superintendent for review and signatures.)

Step 7: Recommendation for course approval or course revision is presented to the Board of Education for approval.

Timelines:

- Course Addition/Revisions that are received and approved **by November 1** will appear in the Course Description Guide **and** in Career Cruising for the following academic year.

- Course Additions/Revisions that are received and approved **by December 15** will only appear in Career Cruising for the following academic year. They will be added to the Course Description Guide the next time the guide is reprinted. The Course Description Guide is printed in November each year.

Course Addition/Revision Recommendation Form **2220 F1**
Student and Instructional Services
Sheboygan Area School District

Department:	Science	Course No:	
Course Title:	Science Intern	# Credits:	0.5
Curricular Area:	Science		
Grade Level(s):	11-12		

Course Length:	X	One Semester					Year Long
Course Type:		Basic	x	Regular			Honors
Offered at:		North Only	X	South Only			North & South

Course will first be offered for the 2026-2027 school year.

Check One:

	Course Revision (No changes in length of course but major content revisions made)
X	Course Addition (New course)

Please address the following in paragraph form in the space below. Please do not submit additional documents unless specified. The space below will expand as needed.

A	**Entrance Requirements (Any pre-requisite courses or other admission requirements):** Grades 11 & 12 Prerequisites: consent of instructor, completion and approval of application
B	**Intended Student Grouping (Indication of ability level or other characteristics of students expected in the course):** Students interested in pursuing careers in science or STEM-related fields; and/or drawn to mentoring peers, with an emphasis on science-related support; and/or motivated by a strong sense of service and contribution to the school community.
C	**Course Justification (Reasons why the course needs to be revised or is needed. Address student needs, societal expectations and/or legal requirements):** Currently, South does not offer a dedicated course focused on developing laboratory skills and fostering professional collaboration within a scientific framework. The availability of semester-long

	science courses is limited. This course supports a broader building and department initiative to expand science learning opportunities for a diverse student population—including those not on a traditional college-preparatory track. It addresses student needs for practical scientific experience, responds to societal expectations for STEM readiness, and promotes equitable access to high-quality science education.	
D	**Course Description (A short summary of the course that can be used to explain it to students, parents, staff, and public – 75 words max.):** This course is designed for students interested in scientific research, education, or STEM-related careers where advanced lab skills and professional collaboration are essential. Science Interns will work with a mentor teacher to plan, prepare, and support lab activities in SHS science courses. Through this hands-on experience, students will build key STEM skills. Enrollment requires an application, and selection is determined by the SHS Science Department.	
E	**Intended Learning Objective(s) (List of major learning objectives for students in this course):** • Students will work independently and collaborate effectively with peers and staff in both classroom and laboratory settings. • Students will support peers by answering questions, assisting with lab setup and procedures, and helping explain scientific concepts. • Students will handle laboratory equipment, supplies, and reagents responsibly, including preparing, reviewing, and modifying lab procedures. • Students will demonstrate strong organizational and time management skills. • Students will maintain consistent attendance, missing class only for school-sponsored activities or approved absences.	
F	Course Content Scope and Sequence (An outline and proposed timeline of what will be taught in the course; ***outline and proposed timeline can be submitted as a separate document***):	
	Weeks 1-2	**Orientation, Expectations & Lab Safety Training** • Course overview and expectations • Comprehensive lab safety training, including proper handling of equipment, chemicals, and reagents • Lab safety certification or quiz • Professional conduct, confidentiality, and ethics • Introduction to lab equipment, materials, and preparation procedures • Set up internship goals and portfolio • Assign mentor teachers and classroom placements • Weekly reflections
	Weeks 3-4	**Gradual Release to Independent Support and/or Mentoring** • Assist mentor teacher with lab prep and cleanup • Observe and support students during labs • Practice communication and mentoring techniques • Gradual increase in independent tasks • Weekly reflections
	Weeks 5-18	**Week 5–18: Independent Lab Support, Mentoring, Advanced Responsibilities & Portfolio Development** (may vary by semester) • Independently manage routine lab setup, cleanup, and supply checks

		• Serve as a peer resource during labs and assist struggling students • Document lab improvement suggestions • Maintain lab safety protocols and organization • Develop leadership and communication skills in lab environments • Assist in modifying or reviewing lab procedures under mentor guidance • Collaborate with mentor teacher on differentiated student support strategies • Manage lab inventory and advanced organization tasks • Finalize and update internship portfolio documenting lab skills, mentoring, and professional growth • Prepare and present reflective project or portfolio to peers and mentor teacher • Participate in career planning activities, including resume building and STEM career exploration • Complete final reflections and course evaluations • Weekly reflections
G	**Instructional Resources (A list of instructional resources that will be used during the course – i.e. textbooks, on-line resources, community resources, etc.):** -Google classroom, google drive, and email	
H	Student Assessment Plan (What standards and criteria will be used to evaluate student attainment of the learning objectives?): *Throughout the term, students will develop an experience portfolio, documenting lab skills and leadership experiences as well as completing daily reflections. This will be assessed by the Mentor Teacher and can be used as an artifact for future education and career endeavors.* **College and Career Readiness (CCR) Standards** Students will demonstrate proficiency in the following CCR areas through hands-on work-based learning and STEM-focused collaboration: • CCR Reading and Writing • CCR Speaking and Listening • CCR Habits and Skills	
	Next Generation Science Standards (NGSS) Students will practice and be assessed on transferable skills relevant across all science disciplines, including: • NGSS SEP 3: Planning and Carrying Out Investigations • NGSS SEP 4: Analyzing and Interpreting Data • NGSS SEP 8: Obtaining, Evaluating, and Communicating Information	
	21st Century Skills Framework (P21) Students will develop and demonstrate: • Critical thinking and problem solving • Communication and collaboration • Creativity and innovation • Information, media, and technology literacy • Flexibility and adaptability • Leadership and responsibility	

Course Addition/Revision Recommendation Form **2220 F1**
Student and Instructional Services
Sheboygan Area School District

I	**Costs (What are the costs associated with the changes or implementation of the new course? – i.e. instructional resources, equipment, necessary professional development, room modifications, etc.):** None

Reviewed By	Signature	Date	Approval – Y/N
Department Chairperson		9/29/25	Y
Building Principal(s)		9/29/25	Y
Curriculum Area Director/Coordinator of Instructional Services		9/29/25	Y
Asst. Supt. of Student & Instructional Services		9/29/25	