



**SENATE COMMITTEE ON CURRICULAR AFFAIRS**  
**COURSE SUBMISSION AND CONSULTATION FORM**

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**Principal Faculty Member(s) Proposing Course**

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Name	User ID	College	Department
DAVID STENSRUD	DJS78	Earth and Mineral Sciences (EM)	Not Available
KIMBERLY FLICK	kdf2	Arts and Architecture (AA)	Not Available
GRAEME SULLIVAN	GLS27	Arts and Architecture (AA)	Not Available

Academic Home: Earth and Mineral Sciences (EM)

Type of Proposal:  Add  Change  Drop

**Course Designation**

(METEO 51N) Meteorology and Visual Arts: To Know is to See

**Course Information**

**Cross-Listed Courses:**

ART 51N(AA)

**Prerequisites:**

**Corequisites:**

**Concurrents:**

**Recommended Preparations:**

Abbreviated Title: METEO and ART  
Discipline: General Education  
Course Listing: Inter-Domain

**Special categories for Undergraduate (001-499) courses**

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**Foundations**

- Writing/Speaking (GWS)
- Quantification (GQ)

**Knowledge Domains**

- Health & Wellness (GHW)
- Natural Sciences (GN)
- Arts (GA)
- Humanities (GH)
- Social and Behavioral Sciences (GS)

**Additional Designations**

- Bachelor of Arts
- International Cultures (IL)
- United States Cultures (US)
- Honors Course
- Common course number - x94, x95, x96, x97, x99
- Writing Across the Curriculum

**First-Year Engagement Program**

First-Year Seminar

Miscellaneous

Common Course

GE Learning Objectives

GenEd Learning Objective: Effective Communication

GenEd Learning Objective: Creative Thinking

GenEd Learning Objective: Crit & Analytical Think

GenEd Learning Objective: Global Learning

GenEd Learning Objective: Integrative Thinking

GenEd Learning Objective: Key Literacies

GenEd Learning Objective: Soc Resp & Ethic Reason

## Bulletin Listing

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**Minimum Credits:** 3  
**Maximum Credits:** 3  
**Repeatable:** NO  
**Department with Curricular Responsibility:** Meteorology (UPEM\_METEO)  
**Effective Semester:** FA 2018  
**Travel Component:** NO

## Course Outline

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### A brief outline or overview of the course content:

This course examines the inter-relationship between what we know and what we see, through an introductory exploration of art and science. Engaging students in the study of weather formation, mainly clouds, artistic depictions within the genre of landscape, and the expressed practice of painting; fosters the development of observational skills necessary for reading the landscape and interpreting collected data. Students will explore the processes leading to cloud formation and artistic depiction, cloud types and layering, cloud interactions with light, signs of severe weather in clouds, and repeatable cloud structures seen at all scales and how these can be represented in a two-dimensional form. Rainbows, halos, and other optical effects in the sky will be surveyed and painted. Data from weather instruments and the individual artist will be collected, shared, and analyzed. We will discuss inductive and deductive reasoning, fast and slow thinking, and different ways to think about the world. Climate change will be explored as will the effects of the studio environment on art. Communication using numbers, visual depictions, and artistic works will be discussed and recommendations on ways to better integrate art into science, and science into art, will be sought.

### A listing of the major topics to be covered with an approximate length of time allotted for their discussion:

Week 1 Seeking Connections between Meteorology and Art  
Week 2 Cloud Types: Terms and Techniques  
Week 3 What causes clouds to form and how can it be represented?  
Week 4 What causes clouds to form and how can it be expressed?  
Week 5 Light and darkness in clouds and art  
Week 6 Interesting atmospheric effects, atmospheric perspective with basic color theory  
Week 7 Reasoning in Art and Meteorology  
Week 8 Layering in Clouds and with Mixed-media methods of painting  
Week 9 Collecting Data! Taking Observations and Painting on-location  
Week 10 Data Analysis and Quality Considerations, Role of Critical feedback  
Week 11 Severe Weather: Understanding and Depiction utilizing special effects  
Week 12 Climate and climate change: Effects on Earth and Effective Expression  
Week 13 Repeatable Structures in Art and Meteorology  
Week 14 Communication in Weather and Art  
Week 15 Putting your knowledge to work: Presentation of Processes

The course is designed to be roughly 50% meteorology and 50% visual arts. Weekly topics will be explored through a duality of artistic and scientific perspectives, thereby discovering common and contrasting themes of observational research and presentation of data. Students will conduct scientific experiments to learn about the physical processes that form clouds, the various cloud types and their use in weather forecasting, how light interacts with clouds, interesting atmospheric effects (rainbows, halos, other optical effects), information on severe weather and climate change, and an exploration of how weather and climate information is communicated. Studio session will provide students an opportunity for artistic experimentation and further investigation of weekly topics within the practice of painting and the continued development of personal skill set and visual vocabulary.

The mix of lecture and studio will enable students to negotiate the scholarly territory between art and science, investigating and expanding ways of thinking about visual observations and data collection. As they paint, creating various atmospheric perspectives, they will see the effects of mixing, layering, simultaneous contrasts of color temperatures and properties, ratios of liquids to solids within the practice of painting; expanding the dialogue of what we see and what we know. As they learn about cloud formation and conduct experiments, they will also see the effects of mixing, layering, how clouds influence our experiences of color and texture, and also expand the dialogue of what we see and what we know.

**Course Description:**

This course examines the inter-relationship between what we know and what we see, through an introductory exploration of art and science. Engaging students in the study of weather formation, mainly clouds, artistic depictions within the genre of landscape, and the expressed practice of painting; fosters the development of observational skills necessary for reading the landscape and interpreting collected data. What we know and what we see is an on-going evolution of development; syncing the old with the new. Therefore, observation and interpretation are essential to critical thinking, making the intersection between art and science a fertile ground for discovery and learning. The exciting part of the course is the large amount of overlap in the general ideas and thought processes used in meteorology and art, especially when using clouds as the connective tissue. Scientists and artists are both detail oriented and worry about the quality of their work. Both involve collecting data to find the best approaches to a problem, and reasoning through challenges that arise. Students will be challenged throughout the course to seek these connections and how perspectives from each discipline inform the other. Meteorology and art have long been aligned in a common quest to understand how the world works, each seeking interpretations and explanations using a range of complementary and contrasting practices and perspectives. Clouds come in a vast array of sizes and shapes, and are depicted in art using a variety of techniques, creating a shared focus for a deeper understanding of both areas of endeavor. Students will learn about the concept of mixing, which is important to cloud formation and to painting. Students will conduct experiments to learn about cloud processes, and will learn and practice artistic techniques to convey atmospheric conditions. Ideas from both perspectives will be integrated in analysis and discussion. Data from instruments and the individual artist will be collected, shared, and analyzed. Learning how clouds form will help with painting, and questions and perspectives that arise with painting will increase the understanding of cloud processes. The common threads in this approach are a curious mind, a strong detail-oriented focus, effective communication, and respect for the creative tension between ambiguity and assurance in the search for a better sense of causes, connections, and incessant changes.

**The name(s) of the faculty member(s) responsible for the development of the course:**

| Name: DAVID STENSRUD (DJS78)

Title:

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| Name: GRAEME SULLIVAN (GLS27)

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| Name: KIMBERLY FLICK (kdf2)

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## Course Justification

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**Instructional, Educational, and Course Objectives:**

**This section should define what the student is expected to learn and what skills the student will develop.**

Art and science are often viewed as very separate approaches to understanding the world, yet their underlying methods are very complimentary. Both are focused on details, learning how different properties interact with each other, and how these processes are represented either visually or quantitatively. This course will integrate these two disciplines. We will use clouds as the main focus, and we will explore the processes that form clouds, and explore how to paint clouds. The importance of the mixing process to both activities will be stressed and how liquids and solids interact to produce the end result. Students will learn that each activity informs and enriches the other. There will be time for reflection and discussions, dealing with understanding and experience, as well as how we think about the world, with the goal to improve understanding of both disciplines. Students will learn more about how they think and gain a greater appreciation of why exploring differences can lead to deeper understanding.

**Evaluation Methods:**

**Include a statement that explains how the achievement of the educational objective identified above will be assessed.**

**The procedures for determining students' grades should be specifically identified.**

Student evaluation will be conducted in several ways. The students will be instructed to use a sketchbook for all class notes, homework and drawing/painting assignments. At the end of the semester, this sketchbook will be turned in and evaluated for content and quality as a large fraction of the grade. We will give 4 quizzes throughout the semester on basic ideas and definitions, to ensure that the students learn the terminology of art and meteorology. One mid-term exam will be given in which we will focus the questions on meteorology and art concepts, but with a few short answer questions about the links between art and meteorology. The quiz materials will be 50% from meteorology and 50% from art and will be graded accordingly. The mid-term

exam questions will also be divided evenly between meteorology and art, but also will include questions on how people reason and the concepts of slow and fast thinking. A final project and presentation will be used that will ask students to produce a TV weather forecast or science broadcast segment that incorporates their own ideas on how this information could be communicated more effectively to the public using concepts and ideas from art, thereby putting into use the knowledge and connections that the course has developed in the students throughout the semester.

**Relationship/Linkage of Course to Other Courses:**

**This statement should relate the course to existing or proposed new courses. It should provide a rationale for the level of instruction, for any prerequisites that may be specified, or for the course's role as a prerequisite for other courses.**

This course has some content that is included in METEO 3: Introductory Meteorology, and to some of the general education ART classes that will teach students the same painting techniques. However, no other course will integrate meteorology and art, so this represents a novel educational opportunity for the students.

**Relationship of Course to Major, Option, Minor, or General Education:**

**This statement should explain how the course will contribute to the major, option, or minor and indicate how it may function as a service course for other departments.**

This course is an interdomain general education GA and GN course, so can be used to fulfill these requirements, but is not used for the major in either department.

**A description of any special facilities:**

An art studio setting with large tables for painting and drawing, as well as sinks for clean up at the end of class, is needed.

**Frequency of Offering and Enrollment:**

We plan to offer the course at University Park once each fall, with an enrollment of 20 or so.

## Alignment with General Education Objectives

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**EFFECTIVE COMMUNICATION** – the ability to exchange information and ideas in oral, written, and visual form in ways that allow for informed and persuasive discourse that builds trust and respect among those engaged in that exchange, and helps create environments where creative ideas and problem-solving flourish.

**KEY LITERACIES** – the ability to identify, interpret, create, communicate and compute using materials in a variety of media and contexts. Literacy acquired in multiple areas, such as textual, quantitative, information/technology, health, intercultural, historical, aesthetic, linguistic (world languages), and scientific, enables individuals to achieve their goals, to develop their knowledge and potential, to lead healthy and productive lives, and to participate fully in their community and wider society.

**CRITICAL AND ANALYTICAL THINKING** – the habit of mind characterized by comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating a conclusion. It is the intellectually disciplined process of conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.

**INTEGRATIVE THINKING** – the ability to synthesize knowledge across multiple domains, modes of inquiry, historical periods, and perspectives, as well as the ability to identify linkages between existing knowledge and new information. Individuals who engage in integrative thinking are able to transfer knowledge within and beyond their current contexts.

**CREATIVE THINKING** – the capacity to synthesize existing ideas, images, or expertise in original ways and the experience of performing, making, thinking, or acting in an imaginative way that may be characterized by innovation, divergent thinking, and intellectual risk taking.

**GLOBAL LEARNING** – the intellectually disciplined abilities to analyze similarities and differences among cultures; evaluate natural, physical, social, cultural, historical, and economic legacies and hierarchies; and engage as community members and leaders who will continue to deal with the intricacies of an ever-changing world. Individuals should acquire the ability to analyze power; identify and critique interdependent global, regional, and local cultures and systems; and evaluate the implications for people's lives.

**SOCIAL RESPONSIBILITY AND ETHICAL REASONING** – the ability to assess one's own values within the social context of problems, recognize ethical issues in a variety of settings, describe how different perspectives might be applied to ethical dilemmas, and consider the ramifications of alternative actions. Individuals should acquire the self-knowledge and leadership skills needed to play a role in creating and maintaining healthy, civil, safe, and thriving communities.

**What component(s) of the course will help students achieve the General Education Learning Objectives covered in the course? Provide evidence that students in the course have adequate opportunities to achieve the identified learning objectives.**

Key Literacies: The course is very hands-on in that the students will conduct the science experiments, will paint their own works of art, and will spend part of each class period in discussion. Students will be able to paint using a variety of different techniques, perform science experiments using different materials and equipment, explain and describe the processes leading to cloud formation, collect weather information across campus using thermometers and be able to synthesize and analyze the results, use their own paintings to help interpret differences in weather information and depict cloud processes, and synthesize quantitative and qualitative information that they gather.

Critical and Analytical Thinking: Students will be able to explain the similarities and differences in science and art, define deductive and inductive reasoning and fast and slow thinking, explain how our thinking process influences our perspectives, and will be able to demonstrate basic knowledge of the important issues of climate change and communication of science in today's polarized world. They will be able to explain how art and science are similar and how they are different, and to demonstrate how each discipline can inform and enrich the other. Their knowledge of meteorology and art will be expanded and they will gain a broad appreciation for both ways of understanding the sky, as well as a better understanding of how they reason and think as individuals.

**Integrative Thinking:** Students will be able to explain the physical processes that lead to cloud formation, and be able to show these processes by creating their own art works. They will be able to describe the challenges of painting a three-dimensional object onto a two-dimensional surface, will be able to demonstrate how art can inform science and science can inform art. In particular, perspective and location are important to both, as well as the importance of details. Students will be able to construct a conceptual models of cloud formation, which they can then integrate into their cloud paintings. The students can apply the perspectives of art and meteorology to new knowledge domains, and demonstrate that these perspectives enhance one another.

**Creative Thinking:** The integrative environment of lecture, lab and studio sessions provide an opportunity for students to engage in creative thinking. The heighten sense of observation and the experience of looking and creating, reveal connections between the disciplines. The studio sessions provide an encouraging environment for non-art majors to think about weekly lecture and lab topics in another way, with another language – the language of visual imagery. Artistic expression encourages creative thinking in the search for questions. While many other approaches seek answers, often creative practices reveal the relevant questions that have yet to be asked. The search for personal expression, often requires its own process, its own timing; to reflect, reconsider, re-contextualize or synthesize existing ideas and perceptions with the emergence of new data, material or information as it becomes available and into student awareness. Working intuitively, often gives rise to divergent thinking, leading to unexpected but welcome results that bring to fruition new modifications and modes of thinking with a fresh perspective on the same collection of data. Engaging students in the process of artistic expression allows for a certain uncensored liberty to think about subjects of study in an untraditional manner. Having the freedom to make mistakes and intuitively investigate weekly topics of discussion, provides students with an outlet for creativity that can incite passion for subject matter; resulting in a powerful pursuit of investigative research. These artistic expressions of scientific studies, foster approaching challenges with imaginative and intellectual risk taking; providing for the development of ideas and recorded observations. Students will be able to demonstrate how art and meteorology are connected using written and visual means of explanation.

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**How will students be assessed to determine their attainment of the Learning Objective(s) of General Education covered in this course? This assessment must be included as a portion of the student's overall performance in this course.**

The sketchbook that each student will use for their class notes, homework and painting assignments, and the final project, are the main tools for student assessment. We also will give 4 quizzes and one mid-term exam that will assess general knowledge and terminology, with a few questions looking at synthesizing information from both areas. The sketchbook will show the growth in artistic ability and confidence over the semester and we will challenge the student to show the connections between meteorology and art. Numerous activities will also ask the students to add to their art the processes and flow patterns that lead to cloud formation but cannot be seen visually. This joining of art and science will help the students integrate the knowledge into a deeper understanding of clouds and how they can be more accurately be depicted in paintings.

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## General Education Domain Criteria

**General Education Designation:** Inter-Domain

### GA Criteria

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- Explain the methods of inquiry in arts fields and describe how the contributions of these fields complement inquiry in other areas
- Demonstrate an expanded knowledge and comprehension of the role that the arts play in various aspects of human endeavor
- Demonstrate competence in the creation of works of art and design
- Demonstrate competence in analysis, critical thinking and interpretive reasoning through the exploration of creative works
- Identify and explain the aesthetic, historic, social, and cultural significance of important works of art and critically assess creative works, their own or others', through evaluative processes of analysis and interpretation

**What components of the course will help students achieve the domain criteria selected above?**

Students will encounter and become conversant with terminologies, techniques, practices, knowledge and skills employed by the arts, utilizing the following course components:

**Terminology:** A glossary of definitions will accompany each studio session, for students to study and practice applying to artworks within the processes of creating, critiquing and discussing course work before finally demonstrating knowledge through quizzes and writing exercises.

**Techniques:** Students will be introduced to wide variety of mark-making and painting applications as presented and demonstrated in the studio component of this course. Students will have the opportunity to practice and expand skill sets first in a required sketchbook and then demonstrating competence within weekly painting assignments. Students will be required to create a mini-techniques book, to use as a reference tool for coursework, demonstrating their applied knowledge of technical skill set.

Students will gain comprehension of the role the arts play in the expression of cultural values and the human condition through the presentation of artist and artwork that in some way depict the environment and the reading of the landscape as subject matter. These "sky stories" provide the opportunity for students to see the primal human desire to know and understand their current environment and their place in time. Students will also be provided with the opportunity for direct observation through the practice of drawing on location as well as the practice of plein-air painting in relation to learning about the many ways in which artist have depicted the natural world around them throughout history

While students will continue practicing their representation of cloud formations and weather depictions, we will expand the definition of representational drawing and painting to include experiences for individual artistic expression. Assignments and activities that activate creative thinking and the imagination giving way to the expressive arts, enhancing the literal visualization with emotional content. Also many of the assignments dovetail similar findings in the lab experiments with artistic applications and results. For example: Techniques involving natural conditions of specific environment and time of year: such as hydro-printing and sun-printing as well as utilizing freezing temperatures to create unique works of artworks.

Finally, students will be given the opportunity to culminate their course experience through the assigned final project. Contemporary issues in the field of meteorology such as climate change will be chosen as the subject matter for a final project consisting of both a written and creative component. Students will have the opportunity to bring their studies into contemporary dialogue through artistic expression, their own and others while researching for their final project. The project will take into consideration cultural significance of the given topic as well as the historic and social implications of our understanding and depiction of our current environment and our place in time.

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## GN Criteria

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- Explain the methods of inquiry in the natural science fields and describe how the contributions of these fields complement inquiry in other areas**
- Construct evidence-based explanations of natural phenomena**
- Demonstrate informed understandings of scientific claims and their applications**
- Evaluate the quality of the data, methods, and inferences used to generate scientific knowledge**
- Identify societal or philosophical implications of discoveries in the natural sciences, as well as their potential to address contemporary problems**

### **What components of the course will help students achieve the domain criteria selected above?**

The hands-on science experiments conducted by the students to learn about cloud formation processes are examples of the methods of inquiry in meteorology. They will be using targeted experiments to learn about one specific physical process, and then combining these learning experiences into a complete understanding of the processes leading to cloud formation.

We have included a data collection activity in which students will disperse across campus to collect temperatures at different locations that we define, and also to paint the sky and conditions when the data were collected. These data will be analyzed and students will be asked to explain the differences in temperatures based upon their understanding of the science as guided by their paintings of the sky and conditions on the ground. Experiments dealing with mixing processes will be reinforced by learning how mixing paints and washes leads to different colors in painting. These are examples of how the course will construct evidence-based explanations of natural phenomena, as well as demonstrating informed understandings of scientific claims.

Data quality will be addressed by an activity in which we compare the accuracy of thermometers in the classroom. By placing these instruments in close proximity, any differences in sensor behavior will be observed. We will then place the instruments across the classroom in various locations close to windows or heat vents, and differences in temperature will be observed. This will help the students understand how errors arise due to both instrument accuracy and local conditions.

We will discuss deductive and inductive reasoning, fast and slow thinking, and introduce the students to the science behind global warming and climate change, as well as practical knowledge regarding the interpretation of radar information and severe weather watches and warnings. All these topics will be discussed from science and art perspectives, with a focus on effective communication and how differences in thinking between individuals can lead to deeper understanding. These topics also will naturally lead to discussions of the implications of discoveries in the natural sciences to societal problems and challenges, which are very much contemporary problems that we are facing as a nation and as a global society.

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## Integrative Studies

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### **Explain how the intellectual frameworks and methodologies of the two Knowledge Domains will be explicitly addressed in the course and practiced by the students.**

The frameworks and methodologies of the two domains will be addressed by hands-on student participation. Students will conduct science experiments to learn about the physical processes of cloud formation, and will learn and practice techniques for painting. Terminology from meteorology and art will be shared, along with discussions on how they are used to help us understand the world.

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### **Demonstrate that each of the two domains will receive approximately equal attention, providing evidence from course topics, assignments, or other course components, and that students will integrate material from both domains.**

The course includes 7 science experiments that the students will perform in small groups to learn how clouds form. They will also collect temperature data from across campus to analyze and integrate to explain the differences found. The students will learn about color scales and color theory, paint washes, brush control, perspective, interactions with various media (water, salt, ink), illumination, layering, and mixing, and will put these into practice painting clouds and sky conditions. We will build connections between what we learn from science and art, as many topics (mixing, layering, illumination, interactions with various media) occur in both areas of endeavor. We will discuss deductive and inductive reasoning, fast and slow thinking, and explore the issues of global warming and effective communication and how art enriches science and science enriches art. The time spent during class is roughly 50% meteorology and 50% art when summed over the entire semester. There may be slightly more time devoted to art, owing to the need for studio time to practice and get instructor feedback. Nearly all lectures and studio times will have contributions from both meteorology and art.

The data collection activity in particular will integrate materials from both disciplines. Temperature data will be collected, and paintings of the cloud and sky recording the conditions at the time of the data collection will be made. Explaining the differences in temperatures across campus will require the students to use their paintings and knowledge of clouds and cloud processes. The final project also nicely integrates art and science by exploring how weather and/or climate information could be communicated more effectively to a broader audience by a better use of art as part of the communication process.

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### **Briefly explain the staffing plan. Given that each Inter-Domain course is approved for two Knowledge Domains, it will be taught by an instructor (or instructional team) with appropriate expertise in both domains.**

This course will be taught by an instructional team with one instructor from the School of Visual Arts and the second instructor from the Department of Meteorology and Atmospheric Science. Both are expected to participate in all classes. The instructor from Visual Arts should have a Masters of Fine Arts with experience in the various media that are part of the course (watercolors,

suminagashi), with a high level of comfort painting in watercolors. The instructor from Meteorology and Atmospheric Science should have a Master of Science in Meteorology or higher degree, with a high level of understanding of cloud microphysics and weather observations. Both instructors should be enthusiastic about teaching general education courses and interested in learning about the other field.

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**Describe the assessments that will be used to determine students' ability to apply integrative thinking.**

The three main assessments are the data collection activity, wherein the students will disperse across campus to assigned locations to collect temperature data and paint the cloud and sky conditions. The data will be compared at the next class period and differences in temperature will be found. These differences can only be explained using the paintings that illustrate the different observation locations and sky conditions.

The second main assessment is the final project. The students will have watched numerous TV weather broadcasts during the semester. They will be asked to use what they have learned in art and apply it to improving the weather and/or climate information and content to make it more accessible to a wider audience. How can art be used to enhance communication? How can art enrich science and science enrich art?

The third main assessment will occur throughout the semester as students practice painting clouds and learn about how clouds are formed. We will stress how understanding cloud formation as understood by science can lead to more accurate depictions of clouds in art. They will learn that an attention to detail is critical to both disciplines. Also, what they learn about mixing, layering, and illumination in art can enrich and enhance their understanding of cloud formation. The sketchbook will be used by the students for class notes, homework and painting assignments and the evolution of their artistic skill and links to science will be evident as the course proceeds throughout the semester. Thus, the evaluation of the sketchbook provides a very strong assessment tool for student understanding and integrative thinking. Classroom discussions, which occur during most class periods, also will help with the assessment.

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**Campuses That Have Offered ( ) Over The Past 4 Years**

semester	AB	AL	BK	BR	BW	CR	DS	ER	FE	GA	GV	HB	HN	HY	LV	MA	NK	PC	SH	SL	UP	WB	WC	WS	XC	XP	XS	YK
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**UPLOADED DOCUMENTS FOLLOW:**

Course Title: Meteorology & Visual Arts

Course Number: METEO 51N / ART 51 N

Credits: 3

Prerequisites: None.

Course Attributes: General Education, Interdomain (N)

General Education Learning Objectives:

- Key Literacies
- Critical and Analytical Thinking
- Integrative Thinking
- Creative Thinking

Course Description: This course examines the inter-relationship between what we know and what we see, through an introductory exploration of art and science. Engaging students in the study of weather formation, mainly clouds, artistic depictions within the genre of landscape, and the expressed practice of painting; fosters the development of observational skills necessary for reading the landscape and interpreting collected data. What we know and what we see is an on-going evolution of development; syncing the old with the new. Therefore, observation and interpretation are essential to critical thinking, making the intersection between art and science a fertile ground for discovery and learning. The exciting part of the course is the large amount of overlap in the general ideas and thought processes used in meteorology and art, especially when using clouds as the connective tissue. Scientists and artists are both detail oriented and worry about the quality of their work. Both involve collecting data to find the best approaches to a problem, and reasoning through challenges that arise. Students will be challenged throughout the course to seek these connections and how perspectives from each discipline inform the other. Meteorology and art have long been aligned in a common quest to understand how the world works, each seeking interpretations and explanations using a range of complementary and contrasting practices and perspectives. Clouds come in a vast array of sizes and shapes, and are depicted in art using a variety of techniques, creating a shared focus for a deeper understanding of both areas of endeavor. Students will learn about the concept of mixing, which is important to cloud formation and to painting. Students will conduct experiments to learn about cloud processes, and will learn and practice artistic techniques to convey atmospheric conditions. Ideas from both perspectives will be integrated in analysis and discussion. Data from instruments and the individual observations artist will be collected, shared, and analyzed. Learning how clouds form will help with painting, and questions and perspectives that arise from painting will increase the understanding of cloud processes. The common threads in this approach are a curious mind, a strong detail-oriented focus, effective communication, and respect for the creative tension between ambiguity and assurance in the search for a better sense of causes, connections, and incessant changes.

Course Learning Objectives:

- Explain the methods of inquiry in the natural science fields and describe how the contributions of these fields complement inquiry in other areas
- Construct evidence-based explanations of natural phenomena

- Demonstrate informed understandings of scientific claims and their applications
- Evaluate the quality of the data, methods, and inferences used to generate scientific knowledge
- Explain the methods of inquiry in arts fields and describe how the contributions of these fields complement inquiry in other areas
- Demonstrate an expanded knowledge and comprehension of the role that the arts play in various aspects of human endeavor
- Demonstrate competence in the creation of works of art and design
- Demonstrate competence in analysis, critical thinking and interpretive reasoning through the exploration of creative works

## Course Activities

## Schedule of Assignments\*

Each week the course has two sessions. The first session is a standard 50-minute lecture time period, and the second session is an approximately two-hour art studio session. Please take the students outside to look at clouds at every opportunity.

### Week 1      **Seeking Connections**

**Lecture 1:** Review syllabus, course expectations, grading, course materials needed.

**Drawing:** Memory/Observation Exercise  
 “What you know” – choose an object that they have with them and ask them to draw it from memory. “What you see” – take out the object and draw it. Compare the drawing from memory with the drawing of the object. Get into small groups and discuss.  
*“The relation between what we see and what we know is never settled.”* Rene Magritte  
 Show TV weather forecast segment. These are available on the web and will be shown to the class at least once a week. Use different stations to show both differences and similarities in the weather information presented.

**Homework:** Initial Page (*1<sup>st</sup> Page of sketchbook*) Contents/Comments Page (*last page of sketchbook*)  
 Secure all course supplies, read syllabus and prepare accordingly

**DUE:** SB=Sketchbook, (*Entry #1*)

**Studio/Lab 1:** Students work in small groups to define what is meant by art, science, and meteorology and their associated processes. Group discussion. Instructor will present examples of fast thinking and then examples of slow thinking. Does this perspective on how human beings think change any of your definitions of art, science, and meteorology? Group discussion. Once the group comes to a formal definition of the three terms, then ask students to turn these word definitions into visual depictions. How do the written and visual depictions of the terms differ? What are

the similarities between artist and scientist?

Can the artist and scientist be the same person? Can we develop/strengthen brain functions? Introduce Leonardo da Vinci and his code for stimulating and encouraging creative genius:

1. Study the science of art.
2. Study the art of science.
3. Develop all your senses especially your ability to see.
4. Study all the above in the light of the idea that everything connects, in some way, to everything else.

Create data cards using definitions from the first activity and incorporating da Vinci's creative stimulation practice of mirror writing using crayons and watercolor for purposeful play.

Close the session with open-ended questions/creative prompts before viewing the documentary. Where do ideas come from? When & where do you get your best ideas? What inspires you?



**Homework:** Watch *Inspirations*, documentary – Afterward, ask - Where do I find my inspiration? Create 2 Response Drawings to answer the question. (*Entry #2 & 3 in sketchbook*)

**CONNECTION:** *Creative curiosity of artist and scientist*

## Week 2 Cloud Types

**DUE:** SB=Sketchbook, (*Entry #2 & 3*)

**Lecture 2:** Ask students to draw two types of clouds from memory. Share drawings in small groups. What are the similarities and differences in the cloud depictions? Report to entire class. Instructor then introduces the three main categories of cloud types – cumulus, stratus, and cirrus – and the three cloud levels – low, middle, and high clouds. Show and discuss the cloud species and cloud mixtures that occur. Discuss the idea of cloud cover or fractional cloudiness.

**Drawing:** Provide resources for learning more and photographs of cloud types. Create collaged cloud identification (ID) cards from photo images to be used as references. Highlight a few weather apps and web sites for finding weather information that will be needed for later assignments. Show TV weather forecast segment.

Cloud Atlas available at <https://www.ems.psu.edu/~lno/Meteo437/atlas.html>  
A cloud type quiz can be found at <http://learningweather.psu.edu/node/20>

**Homework:** Complete cloud identification cards as needed.  
Create a scale sheet – approx. 6 scales to page with 9 blocks in each (*Entry #4 in sketchbook*)

**DUE:** Painting supplies, SB= Entry #4

**Studio/Lab 2:** Look at a variety of cloud photos, and cloud identification cards. Perhaps go outside if clouds are present, and discuss what is seen. Color, shading, luminosity, opacity, distance. Talk about how to read the landscape and cloudscape. Begin training on how to paint clouds with watercolors. Give weekly assignment: paint one cloud scene and record weather conditions at the time the painting was started.



Practice scales and types of washes, paint to water ratio – brush control – wet in wet technique in flat, gradated & variegated washes. Discuss the importance of practice and process of accumulating parts that affect the whole. The objective does not always lie in the end result, as in a finished painting. Sometimes it lies in what we gain by exploring and practicing concepts and the information gathered regarding: our materials, our surfaces, paint characteristics, and the relation between them and our expanding skill set, observation skill with regard to our subject matter and how it all plays a part in translating 3D reality into a 2D illusion. Sometimes, it seems we work backwards especially in water color – (connect with previous studio of da Vinci exercise of increased flexibility in writing). We need to embrace that kind of thinking and flexibility within the practice of painting. For example, working on washes first, instead of painting clouds – the obvious subject. In this case, creating the background first and learning to master washes provide the type of sky for our clouds to exist in. Working top to bottom – Back to front within the picture plane to determine the order in what gets painted next. Paint a silhouette on a selected sky (a successful wash technique) once dry (use acrylic) or draw 1<sup>st</sup> then paint, paint 1<sup>st</sup> then draw using sharpie marker.

**Assignment:** Sky Silhouette: Dark subject matter against luminous sky; demonstrated wash technique

**CONNECTION:** *Role of the observer is critical*

### **Week 3      What causes clouds to form? (part 1)**

**DUE:** Cloud ID cards, Sky Silhouette

**Lecture 3:** Begin the class with quiz 1. After the quiz is finished (10 minutes), the instructor will introduce the main variables for meteorology (temperature, pressure, relative humidity, and wind) and discuss the concept of equilibrium with respect to water, also called saturation. Once the concepts are introduced, have students perform the cloud condensation nuclei experiment to form cloud droplets. This experiment illustrates the importance of these nuclei to cloud formation, as they provide a reduction in the energy barrier for condensation.

**Drawing:** Share Sky Silhouette that each student painted last week and discuss. Show TV weather forecast segment. Go outside and look at the sky and have students identify cloud types.

**Homework:** Observation studies of clouds - (*Entry #5 & 6 in sketchbook*)  
Secure 2 images of clouds (own photos) printed out in gray-scale for studio reference

**DUE:** 2 printed images, SB #4 & 5

**Studio/Lab 3:** Discuss the concept of saturation and ways to reach saturation in the atmosphere – lifting (forced or buoyant), cooling, evaporation (what happened in the experiment), and mixing (good example is seeing your breath in winter). Have students perform the clouds in a glass of soda experiment. This experiment illustrates the energy barriers for carbon dioxide changing from liquid to vapor. When salt is sprinkled into soda, each grain provides a location for nucleation of carbon dioxide bubbles. This is the inverse of a cloud. Ask students to draw what they see from up close and from several feet away. Then discuss the concept of perspective. How does distance influence what you see? Size and color both change with distance. Practice painting clouds with watercolors for the same cloud type but at different distances from the observer. Share with small groups.  
Continued practice of washes – this time with clouds – demonstrate lift out technique for clouds, along with 5 ways to use atmospheric perspective:

1. Diminishing size
2. Diminishing detail fuzzy edges further away crisp edges closer
3. Diminishing contrast
4. Lightening of overall values
5. Neutralization of color/possible shift to blue

**Assignment:** A landscape painting depicting specific cloud type; demonstrating atmospheric perspective

**CONNECTION:** *Perspective in both art and meteorology is important.*

**Week 4**      **What causes clouds to form (part 2)?**      **DUE:** Cloud Perspective Painting

**Lecture 4:** Have students perform the thermal/entrainment experiment. Water is in a tall cylinder and they release a small amount of a salt water and ink mixture at the top. As the mixture is heavier than the water, it sinks and entrains (mixes) in surrounding water as it does so. This process also happens as warm bubbles of air rise from the ground. Conduct the experiment several times and have students chart out how the ink mixture expands as it sinks. Compare results from different student groups.

**Drawing:** Have students draw the entrainment process and discuss. Share paintings from previous week and discuss. Show TV weather forecast segment.

**Homework:** Free choice subject matter from direct observation (*Entry #7 & 8 in sketchbook*)

**DUE:** SB #7 & 8

**Studio/Lab 4:** Have students explore the ancient art of suminagashi, a mono-printing process which is done with ink and water. Explore paint behavior and characteristics in its interaction with water. How to utilize the painting process for its full potential of the medium – water and how the water edges can affect the resulting painting. Water seeks its own, a law you must be aware of as greater wetness flows into lesser wetness. If the ratio is greater water and lesser paint, then the water will flow into the paint, pushing the pigment aside, creating a bloom. If it happens along a line or an edge, it is called a back run. If the paper is damp or intentionally left wet, the paint will seek out the wetness resulting in a bleed. If the greater wetness is paint and the lesser water, then the paint pigments disperse smoothly into the water – creating a charge. Practice purposefully creating these effects and think of an example that this technique may be useful in depicting the atmosphere. Discuss resulting effects of this painting process and its connections to the entrainment process in the atmosphere.

**Assignment:** Two mono-prints demonstrating techniques of suminagashi, 1 black, 1 color

Practice painting demonstrating the intentional use of a bleed, a bloom or a back-run.

**CONNECTION:** *Mixing is a common occurrence in the atmosphere, and knowledge of mixing is important in art.*

**Week 5      Light and darkness**

**DUE:** Sumi prints, Practice Painting

**Lecture 5:** Begin the class with Quiz 2. After the quiz is finished (10 minutes), the Lecturer will help a student or students perform the absorption and scattering experiment. Two petri dishes are filled half-way up with water and put on an overhead projector. Add small amounts of milk to one dish and discuss how the dish becomes luminous and the image of the dish on the screen turns black. One the screen image is completely dark, the petri dish is hard to look at directly, as it is very bright. Do the same by slowly adding black ink into the other petri dish. When the image on the screen turns black, the petri dish is also black. The milk molecules are scattering the incoming light, while the ink molecules are absorbing the incoming light. Both processes are important to how light and shadows are formed. In clouds, scattering of light produces the dark regions seen at cloud bases. Share paintings from previous week and discuss in small groups. Show *Weather World* forecast segment.

**Homework:** Negative space drawings in b/w using ink (sharpie) (*Entry #9 in sketchbook*)

**DUE:** SB #9

**Studio/Lab 5:** Discuss and illustrate how light is captured in art and creates form. Continued discussion of paint characteristics: Discuss luminosity, transparent to opaque colors, permanent or fugitive, and lightfastness quality. Have students create mixing scales using opaque full tonal scale, dilution scales of ink-wash and body color (white paint) Discuss contrasting transparent with opaque passages when painting light and dark cloud scenes. Present the 6 categories of light in the creation of form. Have students create an illustration in sketchbook as a reference. Apply concept within a sphere study and extend out to how it might be applied to various spherical shapes including clouds in combination with descriptive contour. Introduce Sfumato and have students paint a simple still life in greyscale demonstrating it with a contrast of opaque and transparent painted passages. Develop observation of negative space, placement and proportion within the picture frame – toward beginning recognition of composition.

**Assignment:** A simple still life demonstrating 6 categories, opaque & transparent passages using sfumato.

**Homework:** A found still life (as-is, do not arrange) demonstrating value with water-soluble pen (*#10 in SB*)

**CONNECTION:** *Light informs weather observation and art, but in different ways.*

**Week 6      Interesting atmospheric effects**

**DUE:** Still life painting, SB #10

**Lecture 6:** Draw a rainbow from memory. Compare to photograph of a rainbow. Discuss how rainbows are formed (scattering of light). Also discuss other more uncommonly observed effects, such as sundogs, halos, sun pillars, crepuscular rays, and haze. Offer extra credit to students who photograph one of these effects and brings the photograph to class. Share paintings from previous week and discuss in small groups. Show TV weather forecast segment.

**Homework:** Life observation studies using color media - (*Entry #11 & 12 in sketchbook*)

**DUE:** SB #11 & 12

**Studio/Lab 6:** Introduction to basic color theory. How we see color vs how we mix pigment. Discuss color properties, characteristics and relationship through simultaneous contrast and optical mixing. Complete worksheets. Explore special art effects when introducing reactive elements to the water-paint – how does that affect the character or behavior of the paint mixture, such as using salt and alcohol during painting. Discuss similarities between what happens during painting with what is seen in the atmosphere. Describe various terms and techniques in regard to color and have students practice identifying color and mixing various scales and swatches. Create a color wheel in sketchbook using own paint, identify pigments and label accordingly. From the color wheel, select a pair of complements and create a triad by adding a color of choice. Paint this triad in sketch book, labeling the name of pigments used.

**Assignment:** Create a painting demonstrating the use of the created triad – free choice subject matter.

**CONNECTION:** *What is contained in the environment influences its behavior.*

**Week 7 Reasoning in Art and Meteorology**

**DUE:** Tri-ad painting

**Lecture 7:** Discuss deductive and inductive reasoning and their differences. Provide examples. How are these reasoning processes used in art and meteorology? Move on to the reductionist approach.

**Drawing:** Ask students to draw a bicycle. Gather in small groups to discuss similarities and differences. What parts are common and what parts are different in the drawings? Discuss reductionist approaches in meteorology and art. Share paintings from previous week, and discuss in small groups. Show TV weather forecast segment.

**Homework:** Create a non-representational drawing – using only the essential elements (*# 13 in sketchbook*)

**DUE:** SB #13

**Studio/Lab 7:** Mid-term exam. Test knowledge of meteorology and art concepts discussed and explored in class, using short answers and some multiple-choice answers.

**Homework:** Create 3 lift & layer drawings. Using pieces of magic tape and a newspaper (headlines, weather maps, photos/text/comics), lift sections of the ink from the newspaper. Layer pieces of inked tape over top of one another to create abstract compositions. How can you employ the reduction of representation into the essential elements of art and still create an interesting composition? Using line, shape, value, texture, color. Your compositions should be cropped into a one-inch square after neatly trimming with scissors. Make 3 drawings (10 minutes each) and mount them carefully, and evenly spaced (vertically) in sketchbook. (*#14 in sketchbook*)

**Connection:** *We have learned that an effective approach to understanding is to break things down into simpler pieces and then add everything back together, but the interactions between the simpler pieces need to be considered.*

**Week 8      Layering**

**DUE:** SB #14

**Lecture 8:** Discuss weather map symbols and what they mean, including weather station models, cold and warm fronts, hurricane cones and paths, and jet streams. Discuss the cyclone model for low pressure systems and the three-dimensional structure of cyclones. Show TV weather forecast segment.

**Drawing:** Share paintings from previous week and discuss in small groups. Introduce ATC card journal project – in part as the mid-term project, but collectively adding to it (last week’s connection summary) until the end of the semester. Have students create own weather symbols on cards, and make cards for data collection upon our return from break. Show *Weather World* forecast segment.

**Homework:** Create covers for data card journal – free-style, painted, drawing, mixed media, magic tape lifted, or collaged using weather images – news articles, symbols, maps, headline text, etc.

**DUE:** Covers for ATC journal

**Studio/Lab 8:** Explore layering in art and continuation of color theory and triads; how colors imply temperature. Are the colors used in weather depictions consistent with art expectations? Continued Exploration of color mixing and practice with regard to color temperature, creative compositions, emotive color, masking, glazing, layering.

**Assignment:** Create a painting, demonstrating color temperature, and layering through masking / glazing

**CONNECTION:** *Layering in art and weather.*

## **Week 9      Collecting Data!**

**Lecture 9:** Introduce observing and painting project for next studio session. Hand out thermometers to students and explain. Put all thermometers in one location and let sit for 5 minutes. Compare temperatures (they should be very similar). Then place thermometers across lecture hall and let sit for 5 minutes. Again, compare temperatures and find that there are differences. Discuss reasons why. Explain concept of instrument error and bias and representativeness. Show how to estimate cloud cover, wind direction, and wind speed using several easy methods. Assign student observation locations for studio class. Show sample ATC data collection cards - water color on location in conjunction with thermometer project Show TV weather forecast segment.

**Homework:** Life observation studies using color media - (*Entry #15 in sketchbook*)

**DUE:** SB #15

**Studio/Lab 9:** Students meet at studio and are given thermometers and 3 water color cards. Send them out to their locations to collect data. At defined time, students will take observations of temperature, cloud cover, wind speed, and wind direction, followed by painting sample swatches 1 - the exact color of the sky, on the back record the pigment color & technique you used to achieve this particular color combination for today's sky  
2. Type of clouds present or atmospheric condition, on the back record all the data information collected. 3 start on the back – create a journal entry, recording your impression of this particular place. Fill the entire card with descriptive words, even over-writing if necessary, don't stop or think just rapidly record your multi-sensory reaction to what you see, feel, smell, hear etc. Then flip it over and create a mini-painting of the surrounding area with sky. As time and temperature permits, you may want to create another painting or complete the homework in your sketchbook – take a reference photo/s with phone – in case it is too cold to stay out. Return to studio 30 minutes prior to end of class to turn in thermometers and share experiences with group.

**Assignment:** Life observation study on location (from own photo) - (*Entry #16 in sketchbook*)

**CONNECTION:** **Data collection is hard, but it is an important part of meteorology and art.** \_

**Week 10      Data Analysis and Quality!**

**DUE:** SB #16

**Lecture 10:** Collect observations from all students and have students place their temperature data on a campus map. Do any observations have to be adjusted based upon thermometer bias (discovered during previous lecture time)? Are there any differences and if so, what might be causing them? Weather changes? Local conditions? Discuss data quality. For art, equivalent idea is quality of materials and techniques. Share paintings from data collection and discuss in small groups. Create a word cloud – using the descriptive words from the back of painted cards as beginning prompts and share words as group. Show *Weather World* forecast segment.

**Homework:** Create a drawing using 1 of the words from the word cloud as a title for your drawing.  
(*Entry #17 in sketchbook*)

**DUE:** SB #17

**Studio/Lab 10:** Explore information/data content in art, looking at mind mapping, word clouds, creative prompts, and connections with weather maps and symbols. Put these concepts to use during remaining studio time. After students think they are done with the utilization of the process, look at what was created – Is it a work of art? If a picture is worth a thousand words – what kind of images could be added, what kind of materials, symbols or other visual interest could be added to move this into an art poster? Use large paper possibly in groups – tearing up or collaging pieces of their individual's responses to make a collaborative larger scale, inclusive model. This is also a good pre-exercise in sequencing for the final project and stop-motion animation.

**Assignment:** Posterized mind-map/word cloud.

**CONNECTION:** Data collection, data analysis, and display requires careful thought and focused attention.

**Week 11      Severe Weather**

**DUE:** Meteor-mind-map poster

**Lecture 11:** Begin the class with Quiz 3. After the quiz is finished (10 minutes), have students conduct the density current experiment. This shows the 3-d structure of what happens when a cold fluid runs out beneath a warmer fluid, as happens with cold air from thunderstorms when this air reaches the ground. What structures are seen? Do the two fluids mix? Draw a density current. Overview severe weather events (tornadoes, hail, wind, hurricanes, flash floods, lightning, blizzards) and the watch and warning program of the National Weather Service. Show TV weather forecast segment.

**Homework:** (*Entry #18 in sketchbook*)

**DUE:** SB #18

**Studio/Lab 11:** Explore how precipitation is depicted in art. What does it look like and how is it represented? Share paintings from previous week and discuss in small groups. Explore special art effects when introducing reactive elements to the water-paint – how does that affect the character or behavior of the paint mixture, such as using salt and alcohol during previous demonstration. Explore more – including painting with other implements other than a brush such as sponges, sticks, palette knives, toothbrushes. Describe various techniques and have students practice with various substances. Discuss similarities between what happens during painting with what is seen in the atmosphere. Consider time of day, time of year – the seasons of change – how might a rainy spring day look compared to a summer rain or a winter storm? Think about the special effects being used to describe various special effects in weather. Using one or more of special effects – create a painting depicting a winter day or snow scene. Show cloud paintings of John Constable – discuss how historians claim they can almost sense the time of year, location, etc. because of his keen observations, painting skill and knowledge of subject matter.

**Assignment:** A painting of precipitation of a Sky Story; demonstrating a special effect technique. Watch National Geographic movie ***Before the Flood*** by Leonardo DiCaprio. It is available to view at no cost on YouTube. Be ready to discuss during the next lecture.

**CONNECTION:** **We often only see a part of the whole and from this we extrapolate to the broader space.**

**Week 12      Climate and climate change**

**DUE:** Precipitation painting

**Lecture 12:** Conduct invisible radiation experiment, then move on to overview of the greenhouse effect and climate and climate change. Discuss challenges when science intersects with politics. Discuss the way artists use art as a political platform for activism to bring awareness to controversial and new ideas eliciting cultural response. Break into small groups to discuss student perspectives on the movie ***Before the Flood*** and bring questions back for discussion and ideas for activist artwork. Create a word cloud or mind mapping to be used later in stop motion animation.  
Show TV weather forecast segment.

**Homework:** PBS documentary on William Kentridge. Create several response drawings, cut or tear them up, paste pieces into sketchbook, drawing and/or painting between layers to create a new work. See Kurt Switters, Wanetchi Mutu, Robert Rauchenberg. (#19 & 20 in SB)

**DUE:** SB #19 & 20

**Studio/Lab 12:** Share paintings from previous week and discuss in small groups. Continue conversation of climate change in relation to creative discourse through an invented/found visual vocabulary of artistic expression. Discuss how every action creates a reaction (sumi-breath) and how private becomes public and public affects private influencing cultural context. Follow up with idea of improvisational works – in constant state of flux, additive/subtractive works. Using YUPO paper have students explore this concept of adding and subtraction using various items in search of effects thus a visual language and the influence art can have within a studio environment when searching to express ideas to large or abstract to try to articulate within one painting. Discuss how our representation paintings of clouds etc. that we have done until now – cannot convey all that we see, think and know about an – ongoing topic such as climate change. Using the Yupo will allow students to continue building upon knowledge of paint behaviors and characteristics such as: dry times, paint films, adherence to support, paint to water ratios, etc. Introduce stop-motion final project on climate change.

**Homework:** Bring digital camera, recharger unit (and/or batteries), jump-drive, laptop and tripod (strongly recommended) to next studio-class. **YOU MUST BE PREPARED TO WORK** on the final project during our next Studio/Lab and thereafter. Assemble and bring to class whatever materials you will need to make your improvisational stop/action project.

**CONNECTION: Environment is important and we influence it.**

**Week 13      Repeatable Structures**

**DUE:** YUPO Paintings

**Lecture 13:** Conduct fluid flow over obstacles experiment. Pour water down cylinder that has rocks attached to the side. Water will begin to move upward prior to reaching the rocks and water flow after passing the rocks is unsteady. Have students watch several pours and draw what happens to the flow. Discuss how mountains produce these effects in the atmosphere. Discuss mountain and valley flows. Share paintings from data collection and discuss in small groups. Show TV weather forecast segment.

**Homework:** Continued research and development of ideas regarding climate change and final project

**DUE:** Camera / Equipment

**Studio/Lab:** Begin creation and documentation of Final Project.

**Homework:** Continued documentation for final project

**CONNECTION:** *Action at a distance in art and meteorology.*

**Week 14      Communication in weather and art**

**DUE:**

**Lecture 14:** Begin the class with Quiz 4. After the quiz is finished (10 minutes), survey ways that weather and climate information is communicated. Weather maps, satellite and radar observations (and what these mean), written forms, graphics. How is danger expressed? How do you respond to these signals? Then turn to art. How is information communicated in art? Feelings? Beauty? Perspective? Danger? Show TV weather forecast segment.

**Homework:** Continued documentation for final project

**DUE:** documentation

**Studio/Lab 14:** Reserve computer lab at Digital Commons, Pattee Library for tutorial of Final Cut Pro. Assimilated into Final Project

**Homework:** Continued development of final projects

**CONNECTION:** *Communication is central to art and weather forecasting.*

**Week 15**      **Putting your knowledge to work**

**DUE:** Sketchbooks, Painting Assignments

**Lecture 15:** Get into small groups and discuss how weather information you have experienced this semester by watching TV weather forecast segments was presented and what you liked and disliked. Construct summary of group input and have each group present to the class. The final project could be re-worked to include this week – with groups presenting final project clips within a TV weather type video segment – they create and critique in answer to these discussion points – that they could be given when we introduce final project.

Have each small group take the typical outline of a TV weather forecast discussion and alter to make it more accessible to them. What would you change and why? Present thoughts to class – by way of creating own video spoof of TV weather forecasts demonstrating ideas and alterations. Working in pairs – like weather world or small groups create a weather world segment based off of the description above and featuring clips from final projects on climate change or other weather news topic. This final project will combine both a semester-long practice of painting and viewing of TV weather forecasts.

**DUE:** Final Projects

**Studio/Lab:** Share favorite paintings from the semester with the entire class and share why you like this painting the best. Provide feedback to instructors on what worked and what could be improved.

Have a showing of everybody's projects ending with time for critique and discussion.