

Course Syllabus - Scientific Research and Design at UTEP

(Revision: July 5, 2015)

**University of Texas at El Paso
National Science Foundation**

Work With a Scientist Program

Program website: [http:// workwithascientist.utep.edu](http://workwithascientist.utep.edu)

Schedule:

- Spring semester: Jan–May, 2016, 10 Saturdays, 1:00pm–4:30pm, at UTEP
 - 1:00pm – 3:00pm: Science activities
 - 3:00pm – 4:00pm: Cogenerative dialogues
 - 4:00pm – 4:30pm: Meeting with high school teacher of record
- Summer semester: Jun 13–Jul 22, 2016, 30 weekdays, 9:00am-12:00pm & 1:00pm-4:00pm, at UTEP (12:00pm-1:00pm: Lunch provided by the El Paso Independent School District)
 - Monday: 9:00am-12:00pm & 1:00pm-4:00pm, science activities
 - Tuesday:
 - 9:00am-10:00am: Cogenerative dialogues
 - 10:00am-12:00pm & 1:00pm-4:00pm: science activities
 - Wednesday: 9:00am-12:00pm & 1:00pm-4:00pm, science activities
 - Thursday:
 - 9:00am-10:00am: Cogenerative dialogues
 - 10:00am-12:00pm & 1:00pm-4:00pm: science activities
 - Friday:
 - 9:00am-12:00pm & 1:00pm-3:30pm: science activities
 - 3:30-4:00pm: Meeting with high school teachers of record
- Important Dates
 - Orientation: 1:00pm-4:00pm at UTEP on Jan 09 (Sat), 2016
 - Proposal presentation: 1:00pm-4:00pm at UTEP on Jun 18 (Sat), 2016
 - Final presentation: 1:00am-4:00pm at UTEP on July 23 (Sat), 2016

Location: UTEP – Colleges of Education, Science, Health Sciences, and Engineering

Course Description: This course is designed to provide high school students with advanced scientific research experiences through collaboration with UTEP scientists.

Scientific Research & Design Knowledge & Skills:

- a. The student, for at least 40% of instructional time, will conduct laboratory and field investigations using safe, environmentally appropriate, and ethical practices.
- b. The student will use a systematic approach to answer scientific laboratory and field investigative questions.
- c. The student will use critical thinking, scientific reasoning, and problem solving to

- make informed decisions inside and outside the classroom.
- d. The student will formulate hypotheses to guide experimentation and data collection.
 - e. The student will analyze published research.
 - f. The student will develop and implements investigative designs.
 - g. The student will collect, organize, and evaluate qualitative and quantitative data obtained through experimentation.
 - h. The student will learn how to synthesize valid conclusions from qualitative and quantitative data.

Student Learning Outcomes:

- a. Obtain contextualized knowledge about ongoing scientific projects at UTEP.
- b. Improve scientific thinking skills.
- c. Develop research skills.
- d. Develop teamwork skills.
- e. Develop professional communication skills.
- f. Maintain safe laboratory work habits.

Instructors and Assistants:

1. UTEP faculty (scientists)

- Instruct students and guide them in their research projects
- Engage in cogenerative dialogues with students to improve scientific practice
- Assist high school students with the generation of: (a) a “Research Proposal” and a corresponding poster that includes students’ own research question and research plan that has scholarly value and significance for the science community, (b) a “Project Plan” that will be implemented in summer time, and (c) a “Project Report” and a corresponding poster that students will present at UTEP-open house events
- Inform the program director, Dr. Pei-Ling Hsu, and the teachers of record of any scheduling changes to accommodate science activities (e.g., field trips) one week before the change is to take place and ensure that students have transportation arranged.

2. Science research assistants (Science RA)

- Assist UTEP faculty to provide guidance and lab resources to allow students to conduct their own research projects
- Engage in cogenerative dialogues with students to improve scientific practice
- Assist high school students with the generation of: (a) a “Research Proposal” and a corresponding poster that includes students’ own research question and research plan that has scholarly value and significance for the science community, (b) a “Project Plan” that will be implemented in summer time, and (c) a “Project Report” and a corresponding poster that students will present at UTEP-open house events

3. Education research assistants (Education RA)

- Mediate cogenerative dialogues with scientists and students to improve scientific practice
- Assist scientists and science assistants in implementing activities

- Remind students of deadlines and of scheduled activities and assignments
- Video record, collect field notes, and take pictures of students throughout any activities related and relevant to the project
- Provide Excused Absence Request form (also available in the syllabus and at project website) to students upon request and will submit the signed form to the program director for approval
- Provide make-up session form (also available in the syllabus and at project website) upon request

4. High school teachers of record

- Accompany students throughout the program and take attendance
- Follow up on student absences with their parents and provide make-up work sessions within one week of absences
- Remind students of assignment deadlines, grade student assignments online, and follow up with students for missing assignments

Readings

* Harland, D. (2011). *STEM student research handbook*. Arlington, VA: NSTA Press.

- Ch1: Beginning a STEM Research Project
- Ch2: Research Design
- Ch3: Background Research and Note Taking
- Ch4: Writing Hypotheses
- Ch5: Proposal Writing
- Ch6: Organizing a Laboratory Notebook
- Ch7: Descriptive Statistics
- Ch8: Graphical Representations
- Ch9: Inferential Statistics and Data Interpretation
- Ch10: Documentation and Research Paper Setup

Assignments:

1. Individual Work (60 points)

- (1) 15 journal submissions (45 points; each entry is 3 points; Template 1, Rubric 1)
- (2) Reflection on proposal presentation (3 points, Template 3)
- (3) Reflection on final presentation (3 points, Template 6)
- (5) Attendance (9 points): Attendance is critical to receive the full benefits of the unique course at UTEP. Attendance awards will be given at the end of May and July to acknowledge students' commitment. Each absence will result in one point reduction. If the make up session is not completed, another point will be deducted from the total attendance points. That is, a student will have two points reduction if s/he does not complete a make up session when s/he has an absence.

2. Group Work (40 points)

- (1) Research proposal (10 points; Template 2)
- (2) Proposal presentation poster (5 points; Rubric 2)

- (3) Project plan (10 points; Template 4)
- (4) Final research report (10 points; Template 5)
- (5) Project presentation poster (5 points; Rubric 2)

* The due dates and submission times for each assignment can be found in Table 1 and Table 2.

Course Requirements:

1. All assignments (individual and group work) should be submitted through the Blackboard system using Word files. File names should start with your name or group name and end with the assignment name. For example, take the group name of “Lab1-Group1” and name of “Isaac Newton.”
 - IsaacNewton-Journal1.doc
 - IsaacNewton-Journal2.doc
 - Lab1-Group1-ResearchProposal.doc
 - Lab1-Group1-ProposalPresentationPoster.doc
2. Students will be provided with a laptop, issued by El Paso Independent School District, to record their notes and submit their assignments to the CourseSite system (<https://peilinghsu.coursesites.com/>). Students can also access templates for journals and for group assignments on CourseSite.
3. Due dates for each assignment are listed in Table 1, 2, and 3. The due time for electronic submissions is 8:00pm (individual and group work). Delayed submissions of any assignments will cause grade reductions. One late day causes a 10% reduction of a deserved grade, two late days causes a 20% reduction of a deserved grade, and so on. Grading evaluations: A (90–100 points), B (80–89 points), C (70–79 points), D (60–69 points), F (<60 points).
4. Students cannot be absent for more than three days. Students who have more than three unexcused absences will be dropped from the course/project. If the student wants to apply for an excused absence, he/she must fill out an Excused Absence Request form (available at students’ syllabus [Appendix 1], project website, and from Education RA), get it signed by their scientist, their teacher of record, their parents/guardians and the program director one week before the absence date. To obtain the signature of the program director, students need to submit the form to their Education RA after they have obtained the signatures from their scientist, parents/guardians and teacher of record; the Education RA will give the form to the program director for approval. If the request is approved by the program director, a scanned copy of the approval will be emailed to the student, the scientist, and the teacher of record. In the event of an emergency or sudden illness, the student or his/her parent or guardian must call the teacher of record no later than 12:00pm each day the student is absent.
5. Students who are absent must ask for a make-up session with the teacher of record upon the students’ return to school within one week. A Make-Up Session form (available at students’ syllabus [Appendix 2], project website, and from

Education RA) needs to be completed within one week of the absence.

6. This course is a unique course that requires students to participate on weekends and in the summer. Thus, parent/guardian agreement and support are required. The student's parent/guardian will be asked to sign a parent agreement / support document before students are admitted to the course.
7. This course is funded and supported by a UTEP research project. Students' participation will include collaboration with researchers at UTEP (e.g., students will be video-recorded and photographed for program activities, will be required to complete research surveys, and will be interviewed about their participation/perception). Project website: [http:// workwithascientist.utep.edu](http://workwithascientist.utep.edu)
8. \$450 financial support: A student will be supported with \$450 when s/he completes the project. The \$450 will be distributed proportionally throughout the project (i.e., \$100 by the end of May, \$100 by the end of June, \$100 by the end of July, and \$150 six months after the program graduation when a student completes the follow-up interviews/surveys).
9. Students will be randomly assigned to scientists from different fields of study.
10. Students' transportation will be provided by El Paso Independent School District from schools to UTEP and back at no cost. Students should arrive on time to prevent delaying the bus schedule. If students are going to arrive late, please call teacher of record immediately. There is no guarantee that the bus will wait for students and students may have to find alternate transportation if students miss the bus.

*Please note that every effort will be made to adhere to the syllabus. However, the schedule may be changed due to emergent events/issues.

Table 1. Spring semester activity and assignment schedule.

Month	Date	Activity	Assignment	Reading
Jan	09, Sat, 1:00–4:30pm	Orientation at UTEP		
	23, Sat, 1:00–4:30pm	Safety training and introduction to cogenerative dialogue		Ch1
	25, Mon, by 8:00pm		Journal 1 (Template 1)	
Feb	6, Sat, 1:00–4:30pm	Work with UTEP scientists to learn scientific thinking (e.g., how to frame a research question, design experiments, and find solutions)		Ch2
	8, Mon, by 8:00pm		Journal 2 (Template 1)	
	20, Sat, 1:00–4:30pm	Same above (Learn “Scientific Thinking”)		Ch1–2
	22, Mon, by 8:00pm		Journal 3 (Template 1)	
Mar	05, Sat, 1:00–4:30pm	Same above (Learn “Scientific Thinking”)		Ch3
	07, Mon, by 8:00pm		Journal 4 (Template 1)	
	19, Sat, 1:00–4:30pm	Same above (Learn “Scientific Thinking”)		Ch4
	21, Mon, by 8:00pm		Journal 5 (Template 1)	
Apr	02, Sat, 1:00–4:30pm	Same above (Learn “Scientific Thinking”)		Ch5
	04, Mon, by 8:00pm		Journal 6 (Template 1)	
	16, Sat, 1:00–4:30pm	Same above (Learn “Scientific Thinking”)		Ch3–5
	18, Mon, by 5:00pm		Journal 7 (Template 1)	
	30, Sat, 1:00–4:30pm	Same above (Learn “Scientific Thinking”)		Ch6
May	02, Mon, by 8:00pm		Journal 8 (Template 1)	
	14, Sat, 1:00–4:30pm	Same above (Learn “Scientific Thinking”)		Ch7
	16, Mon, by 8:00pm		Journal 9 (Template 1)	
	28, Sat, 1:00-4:00pm	Same above (Learn “Scientific Thinking”)		Ch8
	30, Mon, by 8:00pm		Journal 10 (Template 1)	

Table 2. Summer activity and assignment schedule (Lunch will be provided by EPISD to eat at UTEP).

Month	Week	Date	Activity	Assignment	Reading	
June	13 to July 22	Students are assisted by scientists to conduct their experiments, write their proposals & plans, and develop their poster presentation to be presented on July 23, 2016				
June	3	13–17, Mon–Fri, 9:00am–4:00pm	Work with UTEP scientists to prepare Research Proposal and Proposal Poster. Submit a paper copy of Research Proposal with your scientist's signature to your Education RA by 3:00pm on June 19.	Group work 1: "Research Proposal" (Template 2) By 8:00pm, June 16 , upload proposal to CourseSites. By 3:00pm June 17 , submit printed & signed proposal to your Education RA	Ch9	
		17, Fri, by 8:00pm		Journal 11 (Template 1)		
		18, Sat, 1:00–4:00pm	Proposal presentations (parents are invited) * Evaluation criteria (Rubric 2)	Group Work 2: Proposal Poster, submit to your Education RA		
		19, Sun, by 8:00pm		Proposal Presentation Reflection (Template 3)		
	4	20–24, Mon–Fri, 9:00am–4:00pm	Work with UTEP scientists to prepare Project Plan. Submit a paper copy of Project Plan with your scientists' signatures to your Education RA by 3:00pm on June 26.	Group Work 3: "Project Plan" (Template 4) By 8:00pm, June 23 , upload Project Plan to CourseSites. By 3:00pm June 24 , submit printed & signed Project Plan to your Education RA	Ch10	
		25, Sat, by 8:00pm		Journal 12 (Template 1)		
		1	June 27 -July 01, Mon–Fri, 9:00am–4:00pm	Hands-on scientific practice		Ch6–10
			02, Sat, by 8:00pm		Journal 13 (Template 1)	
2	05–08, Tue–Fri, 9:00am–4:00pm	Same above ("Hands-on scientific practice")				
	09, Sat, by 8:00pm		Journal 14 (Template 1)			
July	3	11–15, Mon–Fri, 9:00am–4:00pm	Same above ("Hands-on scientific practice")			
		15, Fri, by 8:00pm		Group Work 4: "Final Research Report" (Template 5), upload proposal to CourseSites		
	16, Sat, by 8:00pm		Journal 15 (Template 1)			
	4	18–22, Mon–Fri, 9:00am–4:00pm	Prepare "Research Report/Presentation"			
		22, Fri, by 8:00pm		Group Work 5: Final Research Poster, upload proposal to CourseSites		
		23, Sat, 1:00pm–4:00pm	Final research presentations at UTEP (parents are invited) * Evaluation criteria (Rubric 2)			
5	25, Mon, by 8:00pm		Reflection on final presentation (Template 6)			
Aug	1	One post interview with a researcher (time and place will be arranged with individual students)				

Table 3. Follow up interview in 2017.

Mar–May in 2017	One follow-up interview with a researcher (specific time and place will be arranged with individual students)
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Template 1: “Journaling”

Journal 1

(Please update the journal number accordingly, e.g., Journal 2, Journal 3, etc.)

1. What did you learn about the scientific practice (e.g., data, equipment, concepts) this week? (minimum: 120 words)

2. How was your learning experience this week? (minimum: 120 words)

3. How was your experience in cogenerative dialogues this week? (minimum: 120 words)

4. What was the most interesting observation this week? (minimum: 120 words)

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Template 2: "Research Proposal"

Research Proposal (minimum: 1,000 words)

The Research Proposal will include **students' own research question** and research plan that **have scholarly values and significances for the science community**. Scientists will assist students to brainstorm **students' own innovative research question** (i.e., the proposed experiment was not conducted in this lab before) and will **NOT** generate research questions for students.

Part A: Introduction

- A-1. Group members:
- A-2. Leading scientist in the lab:
- A-3. Other mentors:
- A-4. Project title:
- A-5. Research question:

Part B: Research significance

- B-1. Research significance:

Part C: Experiment design:

- C-1. Equipment and tools required for this experiment
- C-2. Methods for this experiment
- C-3. Type of data that will be obtained
- C-4. Timeline for implementing the experiment

Part D: Expert confirmation of innovation:

D-1. As a leading scientist in this lab, I, _____ (print), confirm that this proposed experiment has not been conducted in this lab before.

Signature: _____ Date: _____

Template 3: Reflection on proposal presentation

Reflection on the proposal presentation

1. What did the proposal presentation mean to you? (minimum: 120 words)

2. What was your experience of the proposal presentation? (minimum: 120 words)

3. What did you learn from the proposal presentation? (minimum: 120 words)

4. What aspects of the proposal presentation would you do differently if you were to present again? (minimum: 120 words)

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Template 4: "Project Plan"

Project Plan (minimum: 1,000 words)

Part A: Introduction

- A-1. Group members:
- A-2. Leading scientist in the lab:
- A-3. Other mentors:
- A-4. Project title:
- A-5. Research question:

Part B: Research significance

- B-1. Research significance:

Part C: Experiment design:

- C-1. Equipment and tools required for this experiment
- C-2. Methods for this experiment
- C-3. Type of data that will be obtained
- C-4. Timeline for implementing the experiment

Part D: Two experts' confirmation of scholarly value:

D-1. As a leading scientist in this lab, I, _____ (print), confirm that this project plan has scholarly value for the science community.

Signature: _____ Date: _____

D-2. As a scientist working in a relevant field, I, _____ (print), confirm that this project plan has scholarly value for the science community.

Signature: _____ Date: _____

Template 5: "Final Research Report"

Final Research Report (minimum: 2,000 words)

Part A: Introduction

- A-1. Group members:
- A-2. Leading scientist in the lab:
- A-3. Other mentors:
- A-4. Project title:
- A-5. Research question:

Part B: Research significance

- B-1. Research significance:

Part C: Experiment design

- C-1. Equipment and tools required for this experiment
- C-2. Methods for this experiment
- C-3. Type of data that will be obtained
- C-4. Timeline for implementing the experiment

Part D. Research findings

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Template 6: Reflection on final presentation

Reflection on final presentation

1. What did the final presentation mean to you? (minimum: 120 words)
2. What was your experience of the final presentation? (minimum: 120 words)
3. What did you learn from the final presentation? (minimum: 120 words)
4. What aspects of the final presentation would you do differently if you were to present again? (minimum: 120 words)

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Appendix 1. Excused Absence Request Form

Students who have more than three unexcused absences will be dropped from the course/project. If the student wants to apply for an excused absence, he/she must fill out this Excused Absence Request form, get it signed by their parent/guardian, scientist, their teacher of record, and the program director one week before the absence date. To obtain the signature of the program director, students need to submit the form to their Education RA after they have obtained the signatures from their scientist, parent/guardian and teacher of record. The Education RA will give the form to the program director for approval. If the request is approved by the program director, a scanned copy of the approval will be emailed to the student, the scientist, and the teacher of record.

Student Name:	
Student ID:	
Date of Absence:	
Lab:	

1. What is the reason for your absence?

2. Why is this event important to you?

3. What efforts did you make to try to accommodate your schedule?

Parent/Guardian Name: _____

Parent/Guardian Signature: _____ Date: _____

Scientist (UTEP faculty) Name: _____

Scientist Signature: _____ Date: _____

Teacher of Record Name: _____

Teacher of Record Signature: _____ Date: _____

Program Director Name: _____

Program Director Signature: _____ Date: _____

Appendix 2. Make Up Session Form

Name: _____ ID: _____

UTEP Scientists/Lab: _____

Names of my other two group members: _____

Date of my absence: _____

Reason of my absence: _____

Make Up Session Checklist

Each absence will result in one point reduction. If the make up session is not completed, another point will be deducted from the total attendance points. That is, two points reduction if you do not complete a make up session when you have an absence.

_____ I asked my two group members to help me catch up activities during my absence.

_____ I asked my scientist (UTEP faculty) to help me catch up activities during my absence.

_____ I asked the teacher of record to help me catch up activities during my absence.

Signatures from two group members:

1. My name is _____. I communicated the activities to my group member who was absent that day and help him/her to catch up the work.

Signature: _____ Date: _____

2. My name is _____. I communicated the activities to my group member who was absent that day and help him/her to catch up the work.

Signature: _____ Date: _____

Signature from UTEP scientist (faculty):

My name is _____. I acknowledge that the student communicated with me and caught up work during his/her absence.

Signature: _____ Date: _____

Signature from the teacher of Record:

My name is _____. I acknowledge that the student caught up work occurred during his/her absence.

Signature: _____ Date: _____

Rubric 1: Criteria for Evaluating Journals

Dimensions	Needs More Effort	Satisfactory	Outstanding
Quality of writing	<ul style="list-style-type: none"> • Organization or neatness needs attention • Uses little scientific vocabulary • Notes/explanations are incomplete 	<ul style="list-style-type: none"> • Ideas are somewhat organized and neat • Occasional use of scientific vocabulary • Notes/explanations not totally complete 	<ul style="list-style-type: none"> • Organized, neat, well thought ideas • Scientific vocabulary • Detailed, descriptive, complete notes/explanations
Understanding of the steps and skills of the scientific method and inquiry	<ul style="list-style-type: none"> • Some steps of lab identified correctly • Explanations are not accurate/clear 	<ul style="list-style-type: none"> • Most steps of labs identified correctly • Mostly accurate explanations 	<ul style="list-style-type: none"> • All steps of labs identified correctly • Accurate explanations
Use of diagrams and illustrations to communicate ideas	<ul style="list-style-type: none"> • Not totally accurate • Missing quite a few labels • Not neat 	<ul style="list-style-type: none"> • Accurate but not complete • Some labels • Neat 	<ul style="list-style-type: none"> • Accurate and complete • All labels • Neat
Understanding of information	<ul style="list-style-type: none"> • Explanations not accurate or missing information • Questions not relative or showing much thought 	<ul style="list-style-type: none"> • Mostly accurate explanations • Questions apply but do not show much creativity 	<ul style="list-style-type: none"> • Accurate scientific explanations • Able to generate unique questions that relate
Extended thinking	<ul style="list-style-type: none"> • Not many examples of creative, individual thinking • Did not meet all the minimum requirements of the lesson 	<ul style="list-style-type: none"> • Has some creative examples of individual work and ideas • Did the minimum requirements for each lesson 	<ul style="list-style-type: none"> • Has many examples of individual and creative ways of thinking about information (i.e., unique questions, illustrations, observations, problem-solving descriptions, ideas for projects or experiments, etc.)

Rubric 2: Criteria for Evaluating Proposal Presentation and Final Report Presentation

Presentation #: _____ PRESENTER'S NAME (first & last): _____ JUDGE'S NAME: _____

For each of the criteria listed on the left, please rank the content and presentation by circling the appropriate cell (excellent, very good, satisfactory, needs improvement).

	EXCELLENT	VERY GOOD	SATISFACTORY	NEEDS IMPROVEMENT
CONTENT				
Introduction & Objective	<ul style="list-style-type: none"> • There is an appropriate amount of background information provided. • <i>Connections made to literature.</i> • Objective clearly stated <i>and related to background.</i> 	<ul style="list-style-type: none"> • There is some background information that helps to understand the study. • Objective presented. 	<ul style="list-style-type: none"> • There is some background information but it is not adequate to understand the study. • Objective unclear and/or not related to background information. 	<ul style="list-style-type: none"> • No background information is provided.
Methods	<ul style="list-style-type: none"> • Thorough explanation of methods used and how they relate to objective. • <i>Method was original, innovative, and/or very well designed.</i> 	<ul style="list-style-type: none"> • Good explanation of methods used. • Methods clearly relate to objective. 	<ul style="list-style-type: none"> • Methods used are unclear and/or not appropriate for the study. 	<ul style="list-style-type: none"> • Little to no explanation of methods used. • Methods do not relate to objective.
Results & Conclusion	<ul style="list-style-type: none"> • A <i>substantial</i> amount of high quality data was presented to address their objective. • The conclusions are clear and <i>strongly supported with evidence.</i> 	<ul style="list-style-type: none"> • The data presented mostly address the objective. • The conclusions are mostly supported by the data. 	<ul style="list-style-type: none"> • The data presented do not adequately address the objective. • The conclusions are only partially supported by the data. 	<ul style="list-style-type: none"> • The data presented do not address the objective. • The conclusions are not supported by the data and/or are unrelated to the hypothesis.
Significance	<ul style="list-style-type: none"> • There was a <i>clear indication of implications</i> and future research directions. • <i>Likely contributing to publishable work.</i> 	<ul style="list-style-type: none"> • There was some indication of future research directions and implications of work. 	<ul style="list-style-type: none"> • Some attempt was made to recommend future research directions and/or implications of research were presented. 	<ul style="list-style-type: none"> • No future research directions or implications of research were presented.
PRESENTATION				
Organization	<ul style="list-style-type: none"> • Logical flow from introduction to methods, results, conclusions. • No unnecessary information. 	<ul style="list-style-type: none"> • Logical flow from introduction to methods, results, conclusions. • Very little unnecessary information on the poster. 	<ul style="list-style-type: none"> • There is some difficulty in determining the flow of the story. • Some unnecessary information on the poster. 	<ul style="list-style-type: none"> • Layout is not logical and it is difficult to follow the story. • Too much unnecessary information on the poster.
Visual Aids	<ul style="list-style-type: none"> • Colors and contrast simple and effective. • Perfect font size (i.e., readable from 6 feet, excluding captions). • Appropriate amount of text. • Figures referred to in text. • No errors. 	<ul style="list-style-type: none"> • Colors and contrast good. • Adequate font size (i.e., readable from 4 feet, excluding captions) • Appropriate amount of text. • Figures referred to in text. • Only 1 or 2 minor errors (spelling, grammar, figure numbering, etc.). 	<p><i>There are 1 or 2 of these problems on the poster:</i></p> <ol style="list-style-type: none"> 1. Distracting colors or features 2. Too much text 3. The text is too small 4. Unreferenced figures/tables 5. Errors (spelling, grammar, etc.) 	<p><i>There are 3 or more of these problems on the poster:</i></p> <ol style="list-style-type: none"> 1. Distracting colors or features 2. Too much text 3. The text is too small 4. Unreferenced figures/tables 5. Errors (spelling, grammar, etc.)
Oral Presentation	<ul style="list-style-type: none"> • Presentation is clear, articulate, and concise. • Audience can easily understand and follow the talk. • Presenter easily answers questions and can think critically on the spot. 	<ul style="list-style-type: none"> • Presentation is clear and concise. • Audience understands and follows the talk. • No distracting mannerisms are observed. • Presenter easily answers questions but cannot address issues not directly presented on the poster. 	<ul style="list-style-type: none"> • Language and mannerisms are mostly appropriate. • Talk is too brief or not concise or not well prepared. • Audience has some trouble following the talk. • Presenter can only answer simple questions. 	<ul style="list-style-type: none"> • The presenter mumbles, uses incorrect grammar, has distracting mannerisms, and/or uses jargon excessively. • Audience has trouble following the talk. • Presenter cannot answer simple questions.

*****Please write any comments on the reverse*****

(These evaluation criteria were adapted from Chemistry Department resources UTEP