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PSYCHOLOGY 402-01
Statistics in Psychology
Fall 2008
Course time: Time M/W/F 9:10 - 10:00 am
Location: Conant Hall Room 8
CRN: 10249

CONTACT INFORMATION:

Instructor:	Bethany Fleck	Office:	Hersey House 207
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Guest Instructor:	Heather Fauteux	Office:	Hersey House 207
Phone:	862-1619	Office hours:	Mon 11-12 Wed 10-11
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REQUIRED TEXTS, READINGS, AND MATERIALS:

- Gravetter, F. J. (2008). *Study guide for Gravetter and WALLNau's Essential of statistics for the behavioral sciences* (6th ed.). Belmont, CA: Thompson Higher Education.
- Additional readings will be posted on Blackboard under each Unit.

Note: The textbook for which the study guide was made for will be placed on reserve in the library.

- You will need a calculator for homework and quiz'ams. Any calculator below TI-92 is acceptable. If you forget to bring your calculator to a quiz'am, you are out of luck---**sharing is not allowed**.
- There will be a number of assignments where you will be expected to use SPSS for statistical analysis of data. You can download this program onto your computer (see instructions at: <http://at.unh.edu/acs/services/software/spss.html>) or you can use the computers at the clusters located on campus (see: <http://clusters.unh.edu/> for locations, times, and other useful information).

COURSE DESCRIPTION:

I would like to start by welcoming you to PSYCH 402! As you learned in your introductory psychology course, psychology is the scientific study of mental processes (e.g., thinking and feeling) and behavior. Psychologists use numerical measurements, quantitative methods of analysis, statistical techniques, and mathematical modeling to understand, explain, and predict human behavior. These methods involve measuring real-world phenomena with numerical data, designing research to determine cause and effect relationships, devising and testing hypotheses, and attempting to assemble as complete and accurate an explanation for psychological phenomena as possible. This course will teach you how psychologists employ quantitative research methods and techniques to advance our understanding of a variety of topics drawn from controversies and social issues in the world around you.

In this course, I will provide you with an overview of how psychologists use statistical analysis in psychological research. This includes probability, hypothesis-testing, confidence intervals, exploratory data analysis (including measures of central tendency, variability), t-tests, correlations, bivariate

regression, one-way analysis of variance, and chi square. Although the focus of computation will be by hand, you will also be given an introduction to computer methods of computation.

MAIN OBJECTIVES:

This class is designed to develop your methodological competencies by strengthening your ability to:

- Learn to neither fear nor revere statistics.
- Learn ways to critically interpret statistical observations reported in newspapers, journal articles, political speeches, commercials, and wherever else we find them.
- Recognize, understand, and respect the complexity of diversity.
- Learn ways to use statistics ourselves to communicate our own observations.
- Gain a better understanding of the concepts and theories of statistical inference.
- Learn ways to critically interpret conclusions drawn using statistical inference.
- Gain the ability to comfortably analyze numerical data with a computer using SPSS.

► In order to accomplish these goals/objectives and have a productive learning environment, I believe it is essential to promote a non-discriminatory class climate. Some guidelines to keep in mind in accomplishing this final goal are:

- Speak from your own experience (this may include readings, films, etc.)
- Engage thoughtfully with the content of the class
- Listen to others' thoughts and feelings, even if they differ significantly from your own
- Do not expect yourself or other class members to speak as a representative of a social and/or cultural group

I encourage class members to explore the material presented in this class (and even related topics of personal interest), risk making mistakes in discussing the material, and ask for help in understanding course material (this can include others' points of view as well).

"There is no such thing as an unreasonable question, or a silly question, or a frivolous question, or a waste-of-time question. It's your life, and you've got to get these answers" -Marcia Wallace

Odds are that if you have a question, a handful of students are also wondering the same thing. Although we will do our best to monitor your progress, you also need to play a large part in letting us know where you are having troubles. This means you are going to have to speak up (e.g., ask questions, come to office hours, email us, etc.).

COURSE STRUCTURE: This course is most likely unique to any other course you have taken. We have flipped the normal structure of the class: lectures will be viewed at home online and problem sets will be worked on during class time. This is a learner centered approach to teaching where the focus is on you, the learner. You will be allowed to work at your own pace, however all assignments have set due dates. This course structure promotes active learning. Bonwell & Eison (1991) define active learning as “anything that involves students doing things and thinking about the things they are doing” and includes characteristics such as:

- Involving you more than having you just listen
- Placing the emphasis on developing your skills rather than transmitting information to you
- Involving you in higher-order thinking (e.g., analysis, synthesis and evaluation)
- Engaging you in activities (e.g., readings, discussions, and solving problems)
- Emphasizing the exploration of your own attitudes and beliefs

The reason for this unique course structure is that learner centered approaches and active learning environments have been shown to increase such things as student motivation and engagement, content mastery, collaboration, and interpersonal skills. In addition, these approaches take into consideration the diverse backgrounds and learning styles of college students (Svinicki, 1990; Nelson, 1996; Sorcinelli, 1991).

COURSE ELEMENTS:

Lectures: For each unit there will be a series of assigned lectures that you are required to view before coming to class (which are indicated on the course calendar). Lectures and corresponding slides are located on Blackboard under “Course Documents” → Unit Number → Lecture Folder. Just as in any course I strongly recommend you still take notes during lectures and bring any questions you have to class meetings. Each student’s progress through these lectures will be tracked through instructor software on Blackboard. It is possible for us to see what files you have opened and for how long. For each unit you will either receive full credit for viewing all lectures or no credit if we find you did not view one or more. Specifically there are 5 units. For each complete unit you view you will earn 10 points. All together, viewing the lectures is worth 50 points of your final grade.

Readings: For each unit there will be a series of assigned pages in the Gravetter (2008) “Study Guide” that you are required to read before coming to class. The readings are paired with lectures and are indicated on the course calendar. Prior to application days, additional readings will be assigned. All additional readings will be announced in class and posted on Blackboard under “Course Documents” → “Unit Number” → “Additional Readings”.

Problem Sets: For each unit you will be required to complete a series of graded problem sets. The problem sets will reflect information covered in the lectures and the readings for that unit. Most will be handwritten statistics problems or definitions but at least four will be computer based using SPSS. Problem sets consist of the Self Tests (i.e., true/false, multiple choice, and other questions) located at the end of each chapter in the Study Guide. The answers to these problems are also in the Study Guide, which allow you to check your understanding as you work. Even though you are provided the answers, you are responsible for showing **all** of your work for each problem. More specifically, you must write out why an answer is false and why the answers you chose on the multiple choice questions were correct. You have the relative freedom to work through problem sets at you own pace and with peers, however problem sets have due dates that are indicated on the course calendar and **will not be accepted late**. Problem sets are graded pass/fail based on the complete showing of *all* of your correct work. In other words, if important computational steps are omitted and/or if only letter answers are given, you will not receive credit for that assignment. There are 5 units in the course so you have five problem sets that will be graded. Each problem set is worth 30 points. All together, problem sets are worth 150 points of your final grade.

Workshop Days: You will notice on the course calendar that the majority of our classes are “workshop days.” Because lectures are viewed outside of class, we can devote our time in class to actually working on statistics! During the workshops you can work individually, with your peers, and/or with your instructors on the problem sets assigned for the corresponding unit. The workshops are a time for you to ask questions about the lectures, readings, and/or problems as you progress through the material at your own personal speed. Because you are students motivated to learn, it is expected that you will attend every class; however attendance is not required on workshop days. Nevertheless it is strongly suggested that you make it a priority to come and take advantage of this time to complete your problem sets in a supportive learning environment. Even if you have completed your problem sets on your own time, your peers can benefit from your help and you will gain further understanding through helping them ☺ However, here’s the catch: If your performance drops below par in any area of this class, it will become mandatory for you to attend workshop days until you are able to improve your performance.

Application Days: I know what you are thinking and I bet it sounds like this, “Statistics huh!? Besides for this class, when am I ever going need any of this!?” In an attempt to make statistics more relevant and useful to you, I am going to devote an entire class at the conclusion of every unit (prior to the quiz’am) to the application of statistics. During these classes we will be applying the statistical principles we have been learning to real life situations that you and your peers are exposed to everyday. For example, we will examine statistics from issues in social justice by figuring out what certain demographic statistics really mean for the people living in our society. We will also work at decoding statistics used in current events such as the presidential election or the rate of sexual assault here on campus. We will even play games in which calculating probability successfully can result in big winnings or sore loosing! Your attendance during application days is required (see course calendar) and will be recorded based on completion of group work during each session. Remember, additional readings will be assigned for application days. They will be announced in class, on the course calendar, and posted on Blackboard under “Course Documents” → “Unit Number” → “Additional Readings”. All Application days will be indicated on the course calendar; you must come and **you cannot make up missed work**. Attendance and participation during Application days are taken. Each day is worth 20 points which equals 100 points toward your final grade.

Quiz’ams: You will take 5 quiz’ams in this course. These are tests that are traditionally longer than a quiz and given more often than exams, and therefore are termed “quiz’ams”. Each quiz’am will consist of multiple choice, short-answer, and problem-solving questions. You will be allowed to bring a “Study Guide” to class on the day of a quiz’am. A study guide is any information (e.g., formulas) you deem pertinent that you copy onto an 8.5 x 11” piece of paper. Each quiz’am is intended to evaluate your understanding and skills for each segment of the course, and in this sense, tests are not cumulative. Throughout the course, however, you will learn new material by building on what you have learned previously. Only in this sense, tests may have some cumulative elements. Because life doesn’t stop for school and sometimes we make mistakes, you will be allowed to make-up **1** of your quiz’ams at the end of the semester. All quiz’ams are indicated on the course calendar. Each quiz’ams is worth 80 points which equals 400 points of your final grade.

Labs: The Psychology Department requires you to participate in 3 hours of laboratory experience. You are responsible for signing up for experiments and showing up on time at the appointed dates. You may also arrange an alternate experience with the experimenter if you feel strongly about not participating in an experiment. You are also not allowed to participate in the same experiment twice, unless noted otherwise by the researcher. I will explain the procedure for signing up for experiments in class. The laboratory experience allows you to witness, first hand, the various research methods employed by psychologists. Each lab equals 25 points. Taken together, labs are worth 100 points on your final grade. See attachment for further details.

Final Project:

To demonstrate achievement of quantitative literacy you will complete a final course project due at the end of the term that analyzes some use of quantitative information found regarding a topic of your choice. The topic must be one in which there is a “pro” side and a “con” side and must be viewed through a diverse lens. This project will require you to read about and analyze the statistical material as well as collect some of your own data. Specifically, the project consists of an individually written response and a group poster presentation assessing the statistical information you have gathered. Although we will cover each section of this project in more detail during class, please see the attached handout describing the final project for more information. The Final Project is worth 200 points on your final grade.

Extra Credit: I am giving you multiple ways to earn extra credit points toward each quiz’am. There are a number of social issues on campus and in the surrounding community. You are encouraged to attend one diversity related event per unit surrounding these issues in order to get information, inspiration, ideas, and resources for your final project. If you attend an event, type a 1-page summary/response paper, and attach it to your quiz, you can earn up to 10 points on the quiz’am for each unit. You can only obtain credit for one event per quiz’am, although I encourage you to attend more. Details about events as well as templates for responses will be posted on Blackboard in the folder titled “Extra Credit”.

GRADES:

Course Element	What It’s Worth	What You Scored*
Lectures	50 points (10 per unit)	
Problem Sets	150 points (30 per set)	
Application Days	100 points (20 per day)	
Quiz’ams	400 points (80 per quiz’am)	
Final Project	200 points	
Labs	100 points (25 per lab)	

TOTAL 1000 POINTS

* I would advise you to keep track of your grades for each assignment so you can monitor your progress throughout the semester.

You will be graded on the plus and minus as follows:

	B+ (870-890)	C+ (770-790)	D+ (670-690)
A (930-1000)	B (830-860)	C (730-760)	D (630-660)
A- (900-920%)	B- (800-820)	C- (700-720)	D- (600-620)

PLAGIARISM:

Plagiarism is a form of cheating, punishable (at the discretion of the instructor) by failure in the course in which it occurs and possibly (at the discretion of the dean) by suspension or dismissal from the University. Plagiarism can take a number of forms, including the re-use of your own written work without appropriate modifications and/or without the permission of your instructor. Plagiarism most commonly occurs when material is taken from a source without proper citation. Whenever material is directly quoted it must appear in quotation marks and be properly cited according to APA. A citation without quotation marks is not adequate because it implies that the material quoted is your wording. It is even less acceptable to simply put the source of material in a bibliography at the end of your paper, with neither quotation marks nor references made in the text or notes. Indirect quotations—that is, points taken from some source but restated in your own words—should not appear in quotation marks, but the source from which they come should be cited in the text or in a footnote, depending on the reference style your instructor prefers. If necessary, ask me for further clarification. Remember that a

course grade or even your undergraduate career could be jeopardized by ignorance in this matter. Ignorance does not constitute an excuse for plagiarism.

ADDITIONAL INFORMATION:

- I do not accept late assignments. If you do not come to class when an assignment is due, you have 3 options: turn it in early, submit it via Blackboard by the end of class, or slip it under my door in my office (Hersey House 207).
- All assignments, unless otherwise specified, should be typed with 1-inch margins and double spaced. The only 2 fonts acceptable are 12-point Times New Roman or 11-point Arial.
- Please do not bring cell-phones to class (or be sure that they are turned off). If one goes off in class, ***I reserve the right to answer it.*** To be fair, you can answer mine if it rings.
- UNH makes reasonable **accommodations** in order to provide a student with a disability an equal opportunity to participate in the institution's courses and programs. To qualify for services, you must provide documentation of your disability as determined by a physician and/or licensed certified psychologist or other practitioner who is skilled in the diagnosis of such a disability. The Disability Services for Students office (2-2607) is where UNH students with documented or suspected disabilities can receive these accommodations and academic services. In order to obtain any such accommodations, your instructor must receive a letter from the DSS office before you want the accommodations to take effect (e.g., before a test or homework assignment is due).
 - Documented disabilities include LD, ADHD, deaf/hard of hearing, blind/low vision, psychiatric, medical, physical and mobility (see website: www.unh.edu/disabilityservices)
- You should also familiarize yourself with UNH's Students Rights, Rules, and Responsibilities (see www.unh.edu/student/rights).
- **Additionally, everyone has the right to feel safe.** If you have observed or experienced an incident of bias, discrimination or harassment, you may find the following website useful in regards to reporting and/or getting help: <http://reportit.unh.edu/index.html>

References

- Bonwell, C. G., & Eison, J. A. (1991). Active learning: Creating excitement in the classroom. ERIC Clearinghouse on Higher Education: Washington, D.C.
- Nelson, C. (1996). Student diversity requires different approaches to college teaching. *American Behavioral Scientist*, 40(2), 165-175.
- Sorcinelli, M. D. (1991). Research findings on the seven principles. *New Directions for Teaching and Learning*, 47, 13-25.
- Svinicki, M. D. (1999). New directions in learning and motivation. *New Directions for Teaching and Learning*, 80, 5-27.

PSYCHOLOGY 402 Fall 2008 Course Schedule

September 2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
31	1	2 Classes begin	3 Review the Syllabus	4	5 “Relax your in stats” Prob sets for unit 1: “self test” ch 1, 2, 3	6
7	8 unit one Mandatory Workshop! Review problems “Intro Stat” Lec 1-1 CH 1	9	10 Workshop “Intro Stat” Lec 1-2 CH 1	11	12 Workshop “Frequency Distributions” Lec 1-3 CH 2	13
14	15 Workshop “Frequency Distributions” Lec 1-4 CH 2	16	17 Workshop “Central Tendency” Lec 1-5 CH 3	18	19 Workshop “Central Tendency” Lec 1-5 CH 3 All Prob Sets DUE	20
21	22 Application Day	23	24 Quiz’am 1 CH 1,2,3 Cheat sheet DUE	25	26 unit two Workshop “Variability” Lec 2-1 CH 4 Prob Sets unit 2: “self test” ch 4, 5, 6	27
28	29 Workshop “Variability” Lec 2-2 CH 4	30				

October 2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			<u>1</u> Workshop “Z-scores” Lec 2-3 CH 5	<u>2</u>	<u>3</u> Workshop “Z-scores” Lec 2-4 CH 5	<u>4</u>
<u>5</u>	<u>6</u> Workshop “Probability” Lec 2-5 CH 6	<u>7</u>	<u>8</u> Workshop “Probability” Lec 2-6 CH 6	<u>9</u>	<u>10</u> Workshop “Probability” Lec 2-6 CH 6 All Prob sets DUE	<u>11</u>
<u>12</u>	<u>13</u> Application Day	<u>14</u>	<u>15</u> Quiz’am 2 CH 4,5,6 Cheat sheet DUE	<u>16</u>	<u>17</u> NO CLASS	<u>18</u>
<u>19</u>	<u>20</u> unit three Workshop “Distribution” Lec 3-1 CH 7 Problem sets unit 3: “self test” ch 7, 8, 9	<u>21</u>	<u>22</u> Workshop “Distribution” Lec 3-2 CH 7	<u>23</u>	<u>24</u> Workshop “Hypothesis Testing” Lec 3-3 CH 8	<u>25</u>
<u>26</u>	<u>27</u> Workshop “Hypothesis Testing” Lec 3-4 CH 8	<u>28</u>	<u>29</u> Workshop “The t statistic” Lec 3-5 CH 9	<u>30</u>	<u>31</u> Workshop “The t statistic” Lec 3-6 CH 9 All Problem sets DUE	

November 2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3 Application day	4	5 Quiz'am 3 CH 7,8,9 Cheat sheet DUE	6	7 unit four Workshop "t-test for independent samples" Lec 4-1 CH 10 Problem sets unit 4: "self test" ch 10, 11, 13	8
9	10 Workshop "t-test for independent samples" Lec 4-2 CH 10	11 no classes	12 Workshop "t-test for related samples" Lec 4-3 CH 11	13	14 Workshop "t-test for related samples" Lec 4-4 CH 11	15
16	17 Workshop "ANOVA" Lec 4-5 CH 13	18	19 Workshop "ANOVA" Lec 4-6 CH 13	20	21 Workshop "ANOVA" Lec 4-7 CH 13 All Problem sets DUE	22
23	24 Application day	25	26 Quiz'am 4 CH 10,11,13 Cheat sheet DUE	27 no class	28 no class	29
30						

December 2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	<u>1</u> unit five Workshop “Correlation & Regression” Lec 5-1 CH 15 Problem sets unit 5: “self test” ch 15, 16	<u>2</u>	<u>3</u> Workshop “Correlation & Regression” Lec 5-2 CH 15	<u>4</u>	<u>5</u> Workshop “Correlation & Regression” Lec 5-3 CH 15	<u>6</u>
<u>7</u>	<u>8</u> Workshop “Chi-Square” Lec 5-4 CH 16	<u>9</u>	<u>10</u> Workshop “Chi-Square” Lec 5-5 CH 16 All Problem Sets DUE	<u>11</u>	<u>12</u> LAST DAY Application day: Final Projects DUE	<u>13</u>
<u>14</u>	<u>15</u> Final exam week TBA: Quiz’am 5 CH 15,16 Cheat sheet DUE Make up Quiz’am	<u>16</u>	<u>17</u>	<u>18</u>	<u>19</u>	<u>20</u>

Center for Academic Resources

UNH ~ Wolff House ~ 862-3698 ~ www.cfar.unh.edu



CFAR (say “see far”) – we are the Center for Academic Resources and offer a wide range of academic support services for all undergraduates at UNH.

What We Provide All UNH undergraduates:

- Academic Mentors – work one-on-one with an upperclass student trained to help you develop strategies for academic success, including proven study skill and time management techniques. Learn how to learn more effectively and efficiently!
- Study Groups – join a study group and form a network of “study buddies” who work together for a whole semester. Study groups are offered in selected courses (e.g. Chem 403 and Bio 411) and are lead by a trained upperclass student. Call for other current offerings and register early at Wolff Houses as space is limited.
- Drop In Tutoring – no appointment needed for these sessions – you can attend every meeting or whenever you like throughout the semester. Drop in tutoring is offered for Math 420 and Math 424A&B. Call for other current offerings and drop-in times and locations.
- Staff Consultations – set up an appointment to meet with one of professional staff members to discuss your learning needs and how to capitalize on your strengths.

All the above, plus...

- A computer cluster
- Faculty evaluations (by students)
- Course information provided by professors
- A study lounge
- Tutor referrals
- A great website with scholarship search information and more!

We also provide additional services for students eligible for our Student Support Services component funded by a TRIO grant from the US Department of Education*:

- Individualized subject area tutoring
- GRE prep courses and graduate school advising
- Individualized computer support
- Scholarship search assistance
- Support services for students with learning disabilities, AD/HD

We are located at Wolff House (next to the UNH Health Center). Our regular hours are Monday through Friday, 8:00 am – 4:30 pm. Scheduled programs are also available school nights and weekends. Come visit or call us at 862-3698.

* Eligibility is based on several factors, including financial need and/or documented disability; grant award is \$295,017.

Psychology Statistics Final Project:

Summary

Statistics give us information about people, places, and things, which can help us understand our world. Statistics are not objective. You can use statistics honestly, to open your mind to new possibilities, or you can use them dishonestly, to reinforce your biases. Throughout the semester we will examine a number of social issues and controversies through a statistical lens. For example, affirmative action is an often controversial social issue. There are those who support and oppose affirmative action policies with claims that their side is right. It is often the case that both sides have statistical information supporting their position. How can this be? Who has a stronger statistical case and why? By the end of the semester you will be able to answer such questions for any social issue we cover and/or that you may come across outside of class. You will demonstrate achievement of quantitative literacy in a project due at the end of the term that analyzes some use of quantitative information found regarding a topic of your choice. Although this topic can be in any area of your interest, there are certain criteria that must be met. First, the topic must be one in which there is a “pro” side and a “con” side. Second, this topic must be viewed through a diverse lens. For example, if you are interested in child development, you might present statistics regarding attitudes toward spanking in different cultures. This project will require you to read about and analyze the statistical material supporting different positions on a particular issue. In addition, each group will develop 5 close-ended questions to ask fellow classmates about their particular topic. There will be a data collection day in which each group will be allowed to collect data that they are also to analyze and present. The Final Project is worth 200 points on your final grade.

Objectives

- 1.) Increase knowledge and awareness of diverse people and the issues they face.
- 2.) Better prepare students for entering a diverse society and working with others.
- 3.) Provide opportunity to critically interpret statistical observations.
- 4.) Provide opportunity for application of concepts learned in class.
- 5.) Practice collecting and analyzing own data.
- 6.) Bridge the concepts and experiences of students going on to take a methods course.
- 7.) Final project will mimic poster presentations at conferences, therefore providing an opportunity to see how researchers in the field present and evaluate information.

Format

This project consists of two formats. The first will be an individually written response assessing the statistical information you have gathered. This written response will show me how you have gathered and interpreted the data as well as the conclusions you have drawn. Papers are to be typed following APA formatting. Templates for this assignment will be posted on Blackboard.

The second format for this project will take the form of a group poster presentation based on the information you have gathered. Groups of 3-4 will work together to construct a poster to present at the end of the semester. How you and your group design your poster is left to your ingenuity. However, the objective of your poster is to effectively present information you have reported in your paper around a particular issue so that others viewing your poster can come to an educated conclusion of their own.

Audiences

Although it will help you to share your paper with your group members in constructing the final project, it is not necessary. I am the only one who will read and grade your paper. The second part of this project consists of a poster presentation which the rest of the class will observe and help grade.

Grading Criteria: Papers

The full grading rubric will also be posted on Blackboard. Briefly, you will be graded based on:

- 1.) Content
- 2.) Thoroughness

- 3.) Critical Thinking
- 4.) Statistics Used
- 5.) Interpretation of Statistics
- 6.) Resources
- 7.) Effort

Grading Criteria: Posters

To forestall any “social loafing” people will be graded individually as well as a group for the final poster presentation. Individuals will report what their role was as a group member, what their grade should be, and why. During the poster presentation, 1-2 members will stay with the poster to answer questions, while the rest of the group members walk around the room to observe other groups’ posters and answer questions that will be given in a handout. Individual and group performance will be assessed during the final. The grading rubric for the final presentation will also be posted on Blackboard.

***Each section of this project will be discussed further in class.*