FAYETTEVILLE STATE UNIVERSITY
College of Arts and Sciences
Department of Chemistry and Physics

SYLLABUS

COMPREHENSIVE PHYSICAL SCIENCE: NSCI 110

I. LOCATOR INFORMATION:

Term: One Semester

Course Name: Comprehensive Physical Science
Course Number: NSCI 110

Credit Hours: 4
Total Contact Hours for Class: 5.0
Class meets for: one hour lecture, 3 times a week
two hours Lab, 1 time a week

Office hours: ten hours a week

Departmental Office Location: S&T Room 305
Departmental Office Telephone: 672-2441

FSU Policy on Electronic Mail: Fayetteville State University provides to each student, free of charge, an electronic mail account (username@uncfsu.edu) that is easily accessible via the Internet. The university has established FSU email as the primary mode of correspondence between university officials and enrolled students. Inquiries and requests from students pertaining to academic records, grades, bills, financial aid, and other matters of a confidential nature must be submitted via FSU email. Inquiries or requests from personal email accounts are not assured a response. The university maintains open-use computer laboratories throughout the campus that can be used to access electronic mail. Rules and regulations governing the use of FSU email may be found at: http://www.uncfsu.edu/PDFs/EmailPolicyFinal.pdf

Disabled Student Services: In accordance with Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ACA) of 1990, if you have a disability or think you have a disability to please contact the Center for Personal Development in the Spaulding Building, Room 155 (1st Floor); 910-672-1203.

II. COURSE DESCRIPTION:

NSCI 110 (Comprehensive Physical Science) will explore the principal concepts of the physical sciences which include physics and chemistry. When taken in sequence with NSCI 120 (Modern Biology) the student will receive a comprehensive view of the major science disciplines. This course will consist of lecture, demonstration, discussion, and laboratory sessions. Every opportunity will be provided for the student to make observations, develop problem-solving skills, and use inductive and deductive reasoning. The overall objective for this course is to assist the student in becoming knowledgeable of the viewpoint of science, its study and limitations, and the application of the "scientific method."
III. TEXTBOOK:


2. Fayetteville State University, Department of Natural Sciences. Comprehensive Physical Science NSCI 110 Laboratory Manual

IV. STUDENT LEARNING OUTCOMES:

In view of the scope and sequence of this course, the following objectives have been identified. (Numbers in parentheses identify competencies established by the State Department of Public Instruction for Middle Grades Education majors). Upon completion of this course, students will be able to:

A. Understand the relationships between matter, energy, and motion.
   1. List the International System units of measure for length, mass, volume, time, and force; and apply the basic metric system prefixes to these measurements.
   2. Define mechanics, vector and scalar quantities, speed, velocity, acceleration, work, potential energy, kinetic energy, power, and momentum; and calculate any of these when given sufficient data.
   3. State Newton's three laws of motion and use each to analyze the implications for objects at rest or in motion. (Physics 31)
   4. Discuss the differences between nuclear fusion and nuclear fission reactions, and characterize each as to changes in mass, atomic structure, and radiation. (Physics 29)
   5. List and describe the properties of waves and waveforms and compare and contrast electromagnetic radiation with sound. (Physics 33)
   6. Explain and interpret heat, temperature, specific heat, heat capacity, entropy, plasma, latent heat of fusion, latent heat of vaporization, and the laws of thermodynamics. (Physics 29)
   7. Differentiate between conductors and insulators, super conductor and semiconductor, AC and DC current, series and parallel circuits, a motor and a generator, and other technological devices. (Physics 30, 32, 34)

B. Understand the macro- and microscopic composition of matter.
   1. Describe the general structure of an atom and distinguish between the electromagnetic, gravitational, and nuclear forces that bind the atom together. (Chemistry 13, 14)
   2. Identify the relationships between atomic structure, atomic mass, atomic number, periodic ordering, and chemical bonding. (Chemistry 15)
   3. Define compounds, mixtures, molecules, ions, solutions, colloids, and exothermic/endothermic reactions, activation energy, equilibrium, and electrochemistry. (Chemistry 17, 18)
   4. Define organic chemistry and relate its nomenclature and structure to the various classes of organic compounds such as aliphatic, aromatic, and the major biochemical compounds.
   5. Utilize chemical symbols to construct, balance, and read chemical equations.

(Numbers in parentheses identify competencies established by the State department of Public Instruction for Middle Grade Education majors)

V. COURSE REQUIREMENTS AND EVALUATION CRITERIA:

The instructor will respect all students and will make every effort to maintain a classroom climate that promotes learning for all students. Students must accept their responsibility for maintaining a positive classroom environment by abiding by the following rules:
Students are required to:

1. Attend all lecture and laboratory sessions, except in cases of illness and other unforeseen emergencies. It is the student’s responsibility to contact the instructor about the steps that must be taken for making up any and all missed work. It is recommended that contact with the instructor take place within twenty-four (24) hours of having missed class. See the university catalog for the details.

2. Be punctual. Attendance will be taken promptly at the beginning of each session. Any student coming in after the roll has been called will have been marked absent. It is the student's responsibility to see that all tardies have been duly noted. Students will also be charged with a tardy for departure from the class before the specified end of class. The accumulation of three (3) tardies will result in the student being charged with one (1) absence.

3. Participate actively in classroom discussions and activities. Two key ingredients of every student's learning are sharing opinions and experiences with others, and interacting with others in the teaching-learning situation.

4. Read over and take notes on the indicated chapters BEFORE they are presented in class. This activity mentally prepares one for the learning experience. It also is important because it raises questions that one needs to have answered in order to fully understand concepts presented.

5. Take notes in class. Recopy these notes at the first opportunity after class and certainly the same day as the class in which the notes were taken. Reconcile any discrepancies in the notes taken in class as well as with notes taken in initial reading. Add explanations or drawings or other examples for clarity.

6. Study about two hours for each hour of lecture. This is an absolute minimum for the success in a class.

7. Avail themselves of all pertinent audiovisual and computer-assisted instructional materials.

8. Take examinations ON THE SCHEDULED DATES. No make-up examinations will undertake. An automatic grade of ZERO is recorded for any exam missed for any reason.

9. Be in compliance with the university policy on drugs which prohibits the possession or use of alcoholic beverages or illegal drugs on any part of the campus.

10. CELL PHONE POLICY- Absolutely no cell phones are allowed to be used in class, this includes text messaging. All phones should be turned off upon entering the room. Any earphones must be removed during class – to include blue tooth phone receivers, ipod/mp3 player headphones, etc. Cell phone calculators are not allowed for use on tests or during class. If you are caught using a cell phone during class, you will be asked to leave the classroom and counted absent for that day.

11. Students must refrain from any activity that will disrupt the class.

12. Students are not permitted to use profanity in the classroom. They must not pass notes or carry on private conversations while class is in session.

13. SEE THE INSTRUCTOR IMMEDIATELY WHEN SPECIFIC DIFFICULTIES ARE ENCOUNTERED.
The pace of the teaching strongly depends on the student preparedness, the attention paid to the teaching, and the non-disruption of the teaching. Therefore, only a full cooperation of the students with the professor will allow entirely covering the program.

While the professor will do all possible to help students succeed in getting the most from this course, students are required to come to the class very well prepared. They are advised to review the materials offered in previous classes and do the recommended exercises. Also they are required to check Blackboard for any news and modifications intended to improve the offering.

For maximum teaching efficiency and hence better student learning outcomes, students must avoid disrupting the class. For instance, the use of communication devices and computers severely disrupt the pace of the entire class, thus cell phones are absolutely prohibited in the classroom. Also, laptops do not help grasping the lecture of this course and the instructions, thus students must avoid using them in the classroom.

Grading:

The progress of each student will be evaluated by means of FIVE one-hour exams to be given during the semester, reports related to the laboratory exercises to be performed, and a comprehensive final examination. The lowest exam may be dropped at the discretion of the instructor.

A. Grade Distribution:
   Final grades will be determined by weighting the averages and scores from the above-mentioned evaluative activities.
   Hour Exams & Quizzes 40%
   Laboratory Exercises 25%
   Final Examination 20%
   Quizzes 15%

Short quizzes will be given almost on the daily basis, either in the beginning or at the end of the class.

B. Grading Scale:
   The final letter grade assigned to the student will be based upon the following numerical equivalencies as stated in the University Catalog.

   A = 90 - 100 Superior
   B = 80 - 89 Good
   C = 70 - 79 Marginal
   D = 60 - 69 Below marginal
   F = Below 60 Failure

Note: If these evaluation criteria must be revised because of extraordinary circumstances, the instructor will distribute a written amendment to the syllabus.

REVISION OF GRADES – STUDENT RESPONSIBILITIES
The following revisions become effective on August 16, 2007.
WN GRADE DISCONTINUED


STUDENTS: Do not expect faculty to withdraw you for non-attendance. Drop or withdraw* from classes according to the deadlines published in the catalog. *See warning below about class withdrawals.

NEW TYPE OF GRADE: INTERIM GRADES – (New name for “midterm grade,” with additional purposes). Interim grades will be assigned from the first week of the semester until the deadline for class withdrawals. Interim grades are used for informational and warning purposes only; they are not part of your permanent transcript and have no effect on your GPA. Instructors may assign interim grade of F to warn students of poor academic performance or they may assign “X” or “EA” grades. (See below for explanations) After midterm, faculty will assign all students an interim grade of A – F to inform students of their academic status as of midterm.

- INTERIM GRADE X = NO SHOW – Assigned to students who are on a class roster, but never attend class. For warning purposes only; NOT a final grade.

STUDENTS: Check interim grades early in the semester. If you have an X grade, either begin attending the class or withdraw* from it. *See warning below about class withdrawals. If you do not take action in response to an X grade, you will receive a final grade of FN. (See “FN” below)

- INTERIM GRADE EA = EXCESSIVE ABSENCES - Assigned to students whose class absences exceed 10% of the total contact hours. For warning purposes only, NOT a final grade.

STUDENTS: Check your interim grades often. If you have an “EA” grade for a class, you are in jeopardy of failure if you do not take immediate actions. Either resume attending the class or withdraw from it. *See warning below about class withdrawals.

NEW FINAL GRADE:

- FN = FAILURE DUE TO NON-ATTENDANCE – Assigned to students who are on class roster, but never attend the class. An FN grades is equivalent to an F grade in the calculation of the GPA.

STUDENTS: You must attend (or withdraw* from) all the classes for which you are enrolled. *See warning below about class withdrawals.

WARNING ABOUT CLASS WITHDRAWALS:

- When you withdraw from a class, you are wasting your money and time. You receive no refund for withdrawing from individual classes and you slow your progress toward degree completion.
- If you withdraw from or fail more than one-third of your classes, you will no longer be eligible for financial aid.
- STRIVE TO EARN CREDIT FOR ALL THE CLASSES IN WHICH YOU ENROLL; WITHDRAW FROM CLASSES ONLY WHEN IT IS ABSOLUTELY NECESSARY!

VI. Academic Support Resources

SI, Smarthinking, Criterion, and University College Learning Center Tutoring
Services are available
Frequently access Blackboard for Lecture Notes, Assignments, On-Line Quizzes, Grades, etc.

VII. COURSE OUTLINE WITH ASSIGNMENT SCHEDULE:

Lectures and laboratory exercises will be undertaken in accordance with the following assignment schedule. The laboratory work may take the form of discussions, demonstrations, paperwork exercises, further excursions into the depths of the principles of theory with explanations by the instructor, as well as hands-on investigations involving the submission of a lab report by the student.

It is also assumed that in addition to the topics listed below, the student is assigned both the textual material as well as the exercise problems at the end of the chapters.

<table>
<thead>
<tr>
<th>Chapter</th>
<th>ASSIGNMENT</th>
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<tbody>
<tr>
<td>1</td>
<td>What is SCIENCE? Measurement systems, units, linear graphs, slopes, nature of science, ratios, density, scientific method</td>
</tr>
<tr>
<td>2</td>
<td>Motion, velocity, acceleration, and acceleration of gravity, laws of motion. Force, weight and mass, law of gravitation, and momentum.</td>
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<td></td>
<td>Exam 1</td>
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<tr>
<td>3</td>
<td>Work, energy, potential energy, kinetic energy, energy sources of tomorrow.</td>
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<tr>
<td>4</td>
<td>Heat and temperature, specific heat, kinetic theory of gases, and thermodynamics.</td>
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<tr>
<td>5</td>
<td>Wave motions and sound, properties of wave, and speed of sound waves.</td>
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<tr>
<td>6</td>
<td>Electricity and magnetism, electrostatic forces, electric potential, electric current, electric resistance, ohm’s law, Magnetism, electric current and magnetism.</td>
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<tr>
<td></td>
<td>Exam 2</td>
</tr>
<tr>
<td>7</td>
<td>Light sources. Origin of light, Properties of light, photoelectric effect, and quantization of energy.</td>
</tr>
<tr>
<td>8</td>
<td>Atoms and Periodic Properties of Elements</td>
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<tr>
<td>9</td>
<td>Compounds and chemical change, ionic and covalent bonds, chemical formulas, equations and balancing.</td>
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<tr>
<td>10</td>
<td>Chemical reactions, equations, and types of chemical reactions.</td>
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<tr>
<td></td>
<td>Exam 3</td>
</tr>
<tr>
<td>11</td>
<td>Water and Solutions, properties of water, properties and concentration of solutions, acids, bases, and salts, pH scale.</td>
</tr>
<tr>
<td>12</td>
<td>Organic chemistry, carbon compounds, organic molecules, compounds and chemistry of life.</td>
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<tr>
<td>12</td>
<td>Nuclear reactions, radioactivity, types of decay, types of nuclear reactions, half life</td>
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<tr>
<td></td>
<td>Review for the Final Exam</td>
</tr>
<tr>
<td>Final</td>
<td>Date, time, and location will be announced as the information becomes available.</td>
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</tbody>
</table>

Final Exam
<table>
<thead>
<tr>
<th>Lab#</th>
<th>TITLE</th>
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<tbody>
<tr>
<td>1</td>
<td>Significant figures, graphing, slopes</td>
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<tr>
<td>2</td>
<td>Measurements, Conversions and Density.</td>
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<tr>
<td></td>
<td><strong>Problem Solving and Review for Exam 1</strong></td>
</tr>
<tr>
<td>3</td>
<td>Simple pendulum</td>
</tr>
<tr>
<td>4</td>
<td>Work and Power</td>
</tr>
<tr>
<td>5</td>
<td>Specific heat of metals</td>
</tr>
<tr>
<td></td>
<td><strong>Problem Solving and Review for Exam 2</strong></td>
</tr>
<tr>
<td>6</td>
<td>Speed of sound in air.</td>
</tr>
<tr>
<td>7</td>
<td>Ohm’s law.</td>
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<tr>
<td>8</td>
<td>The inverse square law of light.</td>
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<tr>
<td>9</td>
<td>Law of reflection.</td>
</tr>
<tr>
<td></td>
<td><strong>Problem Solving and Review for Exam 3</strong></td>
</tr>
<tr>
<td>12</td>
<td>Identification of substances based on physical/chemical properties.</td>
</tr>
<tr>
<td>13</td>
<td>Chemical reactions.</td>
</tr>
<tr>
<td>14</td>
<td>Chemical reactions (continued).</td>
</tr>
<tr>
<td>15</td>
<td>Properties of acids and bases.</td>
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<tr>
<td>16</td>
<td>Half life simulation</td>
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</tbody>
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*+ Lab # as given in the Manual

**Lab Reports:**

1) Turn-in your lab report during the following Lab session. For late reports, maximum grade will be reduced by 3 points per day.

2) Reports that are not **neatly written and formatted** will be immediately returned to the student.

3) You are advised to photocopy the worksheets from the Lab Book rather than tearing them from the book.

**VIII. TEACHING STRATEGIES:**

The primary teaching strategy for this course will take the form of lectures and demonstrations of the specific processes and effects related to the topics of interest. Particular sections of the course will be taught in accordance to the instructional styles of the individual faculty member.

**IX. BIBLIOGRAPHY**

The textbook will be considered the primary resource in this class. However, textbooks often do not contain enough information or information in the manner that will be most advantageous for student learning. In light of these shortcomings, it is recommended that each student perform additional reading on each topic covered in class. This may be accomplished by seeking other physical science texts in the library or the instructor's office.
Authority: Issued by the Chancellor. Changes or exceptions to administrative policies issued by the Chancellor may only be made by the Chancellor.

Category: Academic Affairs

Applies to: ● Administrators ● Faculty ● Staff ● Students

History: Approved – November 17, 2008
First Issued – December 9, 2008

Related Policies: *The Code* of the Board of Governors of the University of North Carolina Fayetteville State University’s *Code of Student Conduct*.

Contact for Info: Provost and Vice Chancellor for Academic Affairs (910) 672-1469
Vice Chancellor for Student Affairs (910) 672-1211
Dean of Students (910) 672-1201

I. Purpose

Section 608 of The Code of the Board of Governors of the University of North Carolina (the “UNC Code”) explicitly states that “all students shall be responsible for conducting themselves in a manner that helps to enhance an environment of learning in which the rights, dignity, worth and freedom of each member of the academic community are reported.” The UNC Code further provides that “it shall be the duty of the chancellor to exercise full authority in the regulation of student affairs and student conduct and discipline.”

Disruptive classroom behavior is also a violation of Fayetteville State University’s *Code of Student Conduct* (Section III.B.5.e.) which defines disorderly conduct to include acting in a manner so severe, pervasive, and objectively offensive that it materially or substantially interferes with normal classroom procedures.

This policy is intended as initial response before enforcing Section III.B.5.e. of the university’s *Code of Student Conduct* (“Code”) as it relates to classroom conduct and to enforce the right of all students to receive instruction without interference by disruptive behavior from other students. This policy should be used as a first resort before referring conduct to the Dean of Students for a violation under *Code*.

This policy is not intended to address behavior that poses an imminent threat or danger to the student or others. Such behavior should be immediately reported to the Campus Police and the Vice Chancellor of Student Affairs.
II. DEFINITIONS

A. Classroom – Any setting, such as regular classrooms, laboratories, sites of field experiences or internships, or other settings, in which instruction is provided by an FSU faculty member.

B. Faculty Member – Any individual authorized by Fayetteville State University to provide instruction in a course in which students have the opportunity to earn academic credit.

C. Disruptive Behavior – As used in this policy, any student behavior that interferes with instruction and learning. Examples include, though are not limited to, the following:

1. Failure to respect the rights of other students to express their viewpoints by behaviors such as repeatedly interrupting others while they speak, using profanity and/or disrespectful names or labels for others, ridiculing others for their viewpoints, and other similar behaviors;

2. Excessive talking to other students while the faculty member or other students are presenting information or expressing their viewpoints;

3. Use of cell phones and other electronic devices in violation of the class syllabus;

4. Overt inattentiveness (sleeping, reading newspapers);

5. Eating in class (except as permitted by the faculty member);

6. Threats or statements that jeopardize the safety of the student and others;

7. Failure to follow reasonable requests of faculty members; and/or

8. Entering class late or leaving class early on a regular basis.

Faculty members have the right to clarify specific forms of disruptive behavior beyond those cited above.

III. LIMITATIONS

This policy does not apply to situations in which faculty members believe that a student’s behavior poses a threat to the student’s own safety or the safety of others. In such cases, faculty members shall report the potentially dangerous behavior to the Vice Chancellor for Student Affairs who will determine the appropriate response to the information provided. If there is an immediate threat or danger of bodily harm, the faculty shall report that behavior to the Campus Police immediately.
IV. RESPONSIBILITIES OF FACULTY MEMBERS

A. Instructional Setting

Faculty members are responsible for maintaining an instructional setting in which the rights of all students are respected. To establish such a setting, faculty members are responsible for:

1. Behaving in ways that exhibit professionalism and civility;
2. Providing in the course syllabus clear statements of expectations for student behavior; and
3. Using instructional strategies that encourage students’ active engagement in the learning process.

B. Application of Policy

Faculty members are responsible for applying this policy in a reasonable manner (as defined by what most faculty members in similar circumstances would consider reasonable). Faculty may not use the policy to limit the rights of students to express points of view different from that of the faculty member or other students.

Faculty members should seek guidance in handling cases of classroom misconduct from the Dean of Students and/or Legal Counsel. Current case law in higher education has been fairly consistent in setting higher standards of due process in conduct cases involving students than in academic cases.

C. Reporting an Incident of Disruptive Behavior

Each incident of disruptive behavior should be reported to the Dean of Students. Faculty members shall report such incidents on the university’s Report of Disruptive Classroom Incident form which is included as a part of this policy.

V. RIGHTS AND RESPONSIBILITIES OF STUDENTS

A. Knowledge of and Adherence to this Policy

Students are responsible for knowing and adhering to the provisions of this policy. Claims of ignorance of the policy will not excuse unacceptable behavior.

B. Complying with Requests from Faculty Members

Students are required to comply with requests aimed at reducing disruptive behavior, such as requests to move to another seat, to put away cell phones and other devices, and to leave the classroom. Students must recognize that failure to comply with a faculty member’s request constitutes an additional occurrence of
disruptive behavior. A student’s belief that a faculty member is applying this policy unfairly is not a basis for refusing to comply with that faculty member’s directive.

C. Right of Appeal

There shall be no right of appeal for actions listed under Section VI. Severe sanctions (such as permanent removal from a class) cannot be imposed without the student being formally charged in accordance with the Code. Students charged with a violation of the Code must be advised of their rights as well as offered the opportunity for a hearing. Imposed

VI. RESPONSES TO DISRUPTIVE CLASSROOM BEHAVIOR

When a faculty member determines that a student is engaging in disruptive behavior, the faculty member may take the following actions.

A. Direct Student to Cease Disruptive Behavior

A faculty member may ask a student to cease talking, use of cell phone or other device, or other behaviors that are disrupting class. Faculty members should strive to make requests in a respectful manner and tone.

B. Direct Student to Change Seating Locations

The faculty member may request a student to change his or her seating location to minimize disruptive behavior.

C. Require Student to Have an Individual Meeting with the Faculty Member

The faculty member may meet with the student to discuss the disruptive behavior and warn him or her of the consequences of its continuation.

D. Direct Student to Leave Class for the Remainder of the Class Period

A directive to leave class for the remainder of the class period should be made only after the faculty member has had an individual conference with the student to warn the student of the consequences of continued disruptive behavior. An exception to the requirement that a conference be initially held shall be when a student’s behavior is threatening or abusive to others or is a potential threat to the safety of the student and/or others. If a student, who exhibits such behavior, refuses to leave class as directed by the faculty member, the faculty member may contact FSU’s Police Department to request that the student be removed from the class.
E. Dismiss Class for the Period

A faculty member may dismiss class if he or she concludes that the disruptive behavior is so severe as to make instruction impossible. A faculty member is required to inform his or her immediate supervisor when a class is dismissed for this reason.

F. Deduct Points from a Student’s Grade

A faculty member may deduct points from the final grade of students who continue to disrupt class despite repeated warnings by the faculty member. The student’s grade shall not be reduced by more than one letter grade for disruptive behavior. The faculty member may deduct points from a student’s grade only if the faculty member has had at least one individual conference with the student.

G. Filing a Complaint with the Dean of Students

If a faculty member is considering more severe sanctions against a student who is engaging in disruptive classroom behavior, the faculty member shall consult with the Dean of Students regarding filing a complaint against the student under the Code. Severe sanctions (such as permanent removal from a class) cannot be imposed without a formal charge for disorderly conduct or some other Code violation. A student who has been charged with a violation of the Code must be advised of his/her rights as well as offered the opportunity for a hearing.