

# Chemistry 10: Chemistry for the Liberal Arts Internet Fall 2011

PREREQUISITE: NONE

NUMBER OF UNITS: 3 TOTAL HOURS OF LECTURE: 54

COURSE INSTRUCTOR: Cliff Gottlieb, Phone: 242-2323. e-mail [cgottlieb@shastacollege.edu](mailto:cgottlieb@shastacollege.edu)  
web page <http://www.cliffschemistry.com>

Office Hours: M 12 – 1 PM; T 1-2 PM; W 11AM - 1PM; F 11AM - 12 PM; and by appointment to meet your needs in 1412 or the Science Learning Center, 1626. **If you are ever on campus, please come and visit.**

## CATALOGUE COURSE DESCRIPTION:

A non-mathematical introduction to the major concepts of chemistry with attention to their relevance to practical and societal problems. This course is intended for non-science majors who wish to gain an appreciation for the application of chemistry to everyday living. The course includes such topics as nuclear energy and energy alternatives; health issues of drugs; food additives, nutrition, hormones; chemicals for household use, chemicals in the environment, and synthetics. This course may include field trips. This course will meet the general education requirement for a laboratory science if it is taken with CHEM 11. Chem 11 can be taken while taking Chem 10.

**The online nature of this course offers students the flexibility in study times to meet individual needs. However, a successful student in an online situation must be motivated, organized, and a self-starter. If you do not have these characteristics as a student, save yourself grief and do not enroll in this course!!! Plan to spend at least 9 hours per week on this course. I will do everything I can to help you succeed in this course!!**

REQUIRED TEXTS: (The text as well as many other materials and free tutoring are available in the Science Learning Center, room 1626.)

The Extraordinary Chemistry of Ordinary Things, 4th ed. by Carl Snyder ISBN 0-471-41575-8 8 No DVD or Lab simulation is needed. Available at the Shasta College Bookstore or any on-line book retailer.

I have provided numerous resources on my web sites. On the Shasta College Online course management program are lectures notes; practice worksheets with answers, and links to other websites will assist you in learning the subject matter of this class.

## COURSE OVERVIEW

This course will look at some of the fundamental ideas and principles of scientific thinking and chemistry. I will place an emphasis on practical applications of chemistry to everyday life. This is a college/university level course that is transferable to four-year institutions. It is not a high school course. Students who are non-science majors or who are just interested in learning about chemistry in our lives should enroll in this course. If you have any concerns about whether this course is appropriate for you, please contact me immediately.

## INTERNET DELIVERY ISSUES:

The entire course is on the internet. Unless unusual situations occur, there is no face-to-face component to the course.

This version of this course will be delivered over the internet using a program called the Shasta College Online program. This delivery system allows students the freedom to set their own schedule for completing the coursework. Most documents are in Adobe Acrobat PDF format. You should download the free Acrobat Reader immediately and install it on your computer. Here is the hyperlink, [Get Acrobat Reader](#). **You must be comfortable with working on computers and using the internet. If you are not, do not enroll in this course. Do not expect significant technical computer assistance from Shasta College or me.** You also must expect to spend the same amount of time on this course to what you would have spent on the face-to-face version of this course. **You should log onto this course everyday, check the course calendar, and make sure all of your work is up to date.** You should expect to spend at least nine hours per week on this course. Furthermore you must have sufficient self-discipline to set and adhere to your own and to the course's timelines. The internet version of this course is equal to or more rigorous than the face-to-face version. **DO NOT FALL BEHIND!!**

Learning styles: If your main learning style is audio/listening, an internet course is probably not for you unless you read the notes and text and record that on your mp3 player. Go to <http://www.vark-learn.com> and take a short learning style questionnaire to find your primary learning style(s). You should score high on reading to be successful in this course.

**Course schedule, timelines, and deadlines can be viewed in this syllabus and on the course calendar. I will try to accommodate out of the ordinary circumstances. However, if you cannot meet these conditions and timelines then you should not enroll in this internet course!**

#### METHODS OF EVALUATION/GRADING SCALE:

Each of you has the innate ability to earn an "A". I hope that each of you will **work to achieve** an "A"!!

1. 400 points for exams. Four exams are 100 points each. There is no cumulative final
2. 100 points for 8 quizzes, 3 assignments and 1 discussion with no replies. Each of these are worth 10 points. There are 12 of them. So two of them are for extra credit, your choice. So it is possible to earn up to 120 points out of 100 points possible. The syllabus quiz does not count towards your grade.
3. 100 points Classroom discussions will count for 100 points. There will be 7 discussion topics on which you must post your thoughts on the class discussion board and make 2 replies to your classmates' posts. Each original post is worth 10 points. Your two replies are worth 5 points total. One set of two replies is extra credit. So it is possible to earn 105 points out of 100 points.
4. There are three optional extra credit quizzes that involve topics that use some more involved algebra math skills. These topics are optional. You can earn up to 15 points for each of these quizzes. Any points earned on these quizzes on optional topics will be added to your total course points as extra credit. They cannot hurt your grade.

Course grades are based on the points that you earn. There are 600 points in the course with the opportunity to earn up to 670. Course Grades: A = 540 or more points; B = 480 – 539 points; C = 420 – 479 points; D = 360 – 419 points; F = 359 or fewer points. THESE POINT VALUES FOR THESE GRADES ARE IN STONE AND WILL NOT BE DEVIATED EVEN BY ONE POINT!

**There is NO OTHER CREDIT other than outlined above. No make-up or LATE exams, quizzes, or homework are allowed unless you have immediate family or personal health or legal emergencies. Contact me IMMEDIATELY using the Angel online program's e-mail or office phone at 530-242-2323 as soon as possible, typically the same day, to notify me of your emergency. Do not call me at home!! Be prepared to FAX me documentation to verify your emergency. If you have health, legal, or sports non-emergencies, you may be able to make arrangements to take an exam, quiz or submit homework early. You must contact me at least one week before the quiz/exam to make arrangements. If technical problems occur during an exam or quiz, call me immediately 530-242-2323.**

If you work within my parameters, I will do everything I can to accommodate your needs. I do not drop exams, nor offer other extra credit. Keep track of your own total points and grade using the Shasta online program.. During the week before the last day to drop, I will review your class performance and grades. Otherwise do not ask me to figure out your grade. I will discuss with you at anytime, your progress in the class. If you have any corrections or grade questions about any exam, quiz, or other graded assignment, you must notify me within one calendar week after the assignment is returned to the class. No adjustments in grades will be made after this time. I reserve the right to add new assignments. I also reserve the right to create grading policies to cope with atypical situations.

THE DETAILS REGARDING EVALUATION: All work is to be done by yourself and submitted individually

EXAMS will be 50 multiple choice or fill in the blank questions with each question worth 2 points. I will post a study guide that will have test type questions on it. The questions on each exam will come from the study guide. The study guide will not have the answers. You must find the answers in the text or in my notes. On exam days, I will make each exam available by 12 AM Pacific time and it must be completed typically by the next day by 11:55 PM, Pacific Time Zone (USA). You will have at least a two-day window in which to take the exam. The exam will be timed using Shasta College Online . If you go over the time limit, 1 point per minute over will be deducted from you grade. No late exams permitted except for health or legal situations or emergencies. If technical problems occur such as computer or internet connection failure, you must call me immediately at 530-242-2323. Do not call me at home!!! I reserve the right to deliver any exam to any student in a paper-pencil format in a proctored environment.

**Exam Dates: Exam 1 – Sept. 16-18; Exam 2 – Oct. 12 & 13; Exam 3 – Nov. 14 & 15; Exam 4 -- Dec. 12-13**

QUIZZES will be multiple choice, fill in the blank, submitting an assignment consisting of a list of at home observations, and one discussion that will involve and internet search. Most of the quizzes will cover material directly from the worksheets which I provide online. Quizzes will be posted by 12 AM Pacific time and it must be completed by 11:55 PM of the same day on the Pacific Time Zone (USA). No late or make-up quizzes permitted with no exceptions other than health or legal situations or emergencies. You will be required to take a syllabus quiz to make sure that you the “real” quizzes cause you no technical problems and to demonstrate that you have read this document. The syllabus quiz will not count toward your grade but must be passed with 100% or you will not be allowed to continue in the class. For the syllabus quiz, you will get 4 tries. For all other quizzes you will get only 1 attempt.

CLASSROOM DISCUSSION FORUMS will be posted on the class calendar and will become available on the Shasta College Online discussion board about 1 week before the discussions are due. They will involve your thoughts on various more open-ended questions and topics. For topics and due dates check the schedule in this syllabus or the class calendar on Shasta College Online. For each discussion topic you are required to write one or more paragraphs to explain your views. Your writing should be college level, not text messages or tweets. I will evaluate them based on the following rubric: High quality (10 points) – discussion is accurate, organized, well thought through, and presented cogently. It includes facts to support ideas and opinions. The writing is grammatically correct. Medium quality (7 points) – discussion is insightful but is missing one item of a high quality discussion. Needs Improvement (5 points or less) – missing two or more of the characteristics of a high quality discussion. Your first discussion will not be evaluated but is required to make sure that you can post discussions on the discussion board. The topic will be to tell the class about you. Please post your discussions on the topic which you addressing. Check your grades on the Shasta College Online program to see your grades on the discussions. The grades will typically be posted within a week of the due date of the replies.

Discussion replies will also be posted on the discussion board and must meet the deadline posted on the calendar. You will need to make a brief response of at least one or two sentences to two other posted discussions. They will be graded as satisfactory (5 points) or unsatisfactory (0 points). Satisfactory replies will show that you have read the original discussion and will comment directly on items in the original discussion. Please e-mail me if you have any concerns about the way your discussions have been evaluated.

There will also be two other discussion boards available to you throughout the class. One is for general discussions between you and your classmates. I will generally not look at these discussions. Another discussion board will be dedicated to questions that you might have that you would like me to address. I will check this board regularly.

Length of discussion is not the most important factor in determining quality. But a high quality discussion must be at least a 4-sentence paragraph. **ETIQUETTE IS IMPORTANT. RUDENESS, BIGOTRY, AND PERSONAL ATTACKS WILL NOT BE TOLERATED.** Any such displays will cause you to be dropped from the class at my discretion. Disagreement on issues is fine and I encourage it, but disagree with RESPECT FOR OTHERS' OPINIONS!. Furthermore to make on-line discussions more “human” you should use emoticons to show your feelings. Check out to find out how to use [emoticons](#). ☺

OPTIONAL QUIZZES will follow the same procedure as regular quizzes. There are 3 of them and will count as extra credit. They are algebra based and you will need a scientific calculator to take them. More information is on the Shasta College Online calendar.

CHEATING is the unauthorized giving or getting of answers to quizzes or exams or having someone else take exams, take quizzes or write discussions for you. All work is to be done individually. It is not fair to you, your classmates, or to me. In life all you really own is your personal integrity. Please for your own peace of mind, do not throw away your integrity for a grade in a course. That would be pathetic. DON'T DO IT!! . If you cheat, you will receive a 0 for the work involved and a penalty of a 150-point deduction from your final course grade. All work is to be completed by you individually. No copying or group work unless explicitly stated. **BY ENROLLING IN THIS CLASS, YOU AGREE NOT TO CHEAT BY OATH ON YOUR RELIGIOUS, SPIRITUAL, OR PHILOSOPHICAL BELIEFS !**

ERRORS ,OMISSIONS, or CORRECTIONS on all graded exams, quizzes, and discussions must be submitted to me via e-mail NO LATER THAN ONE WEEK AFTER THE DUE DATE. You can see the correct answers to any exam or quiz by clicking on any exam/quiz that has been graded. Exams and quizzes will be graded by the day after the availability period ends.

### MY RESPONSIBILITES

I will provide you with interesting information to you and be available to answer your questions. I will help you hone your understanding of how the world works from a chemical perspective. I will be available for consultation on the phone during office hours, by e-mail from Monday to Friday, and by chat room when available. I am online throughout the day on Mondays though Fridays and check the class regularly. On these days you will receive a reply usually within hours and definitely within 24 hours. After Friday at 1PM through Sunday night, I am online at various times, so I may not respond to communications until Sunday night or Monday morning. Bottom line: I will help you to achieve the best grade that you chose to achieve.

### YOUR ROLE

You must read the book, read the notes, complete assignments, and participate in the class discussions. Log onto the class Shasta College Online EVERYDAY and check the calendar! Click on calendar dates for more information. If you are a slacker, DO NOT ENROLL. You need to be self-motivated and disciplined to work on your own to complete assignments. You need to work with your classmates on-line to facilitate your learning by using the discussion board and the chat rooms in Shasta College Online. Studies show that students who study in groups typically perform better than students who do not work in groups. If you do not log onto the Shasta College Online page for 5 consecutive school days without notifying me, I reserve the right to make the course non-accessible to you.

I DO NOT FORMALLY DROP STUDENTS FROM THE CLASS. IN ALL CASES YOU MUST DROP THE CLASS YOURSELF THROUGH THE REGISTRAR'S OFFICE!!

**IMPORTANT!!! USING THE SHASTA COLLEGE ONLINE PROGRAM (Moodle):** important stuff pay close attention!!!

Learn how to use the Shasta College Online program. Read the student guide under resources. Click on everything to see what it does, you cannot hurt the program. USE FIREFOX, or use Internet Explorer in compatibility mode. Do not use or Safari; it just doesn't work correctly all the time.

### CLASS COMMUNICATIONS

USE THE Shasta College Online e-mail. You can also contact me by leaving a message at my office phone 530-242-2323. I will communicate with you by individual Shasta College Online e-mail or class discussion board. Classmates will communicate with each other by Shasta College Online e-mail or class discussion board. In case of emergency you can call me at my office, use the Shasta College Online e-mail, or use my general e-mail address [cgottlieb@shastacollege.edu](mailto:cgottlieb@shastacollege.edu) Please put **internet 10** as your subject if you use my general e-mail in an emergency. Do not use my general e-mail for non-emergency situations!!!

### OTHER RESOURCES

Shasta College provides a wonderful resource to all science students, which is the Science Learning Center. It has tutors and other resources available if you are on campus. It is trying to develop on-line tutoring capabilities. Check it out in room 1626 or online.

QUESTIONS If you have questions, please e-mail me. I am here to help you.

COURSE SCHEDULE, brief version.

Week starting	Chapters	Week starting	Chapters
8/15	1 & 2	10/17	12 & 13
8/22	3	10/24	14 & 15
8/29	4 & 5	10/31	16 & 17
9/6	9 & Exam I	11/7	17 & Exam III
9/12	6 & 7	11/14	18 & 19
9/19	7 & 21	11/21	19 & 20
9/26	8 & 10	11/28	20 & 22
10/3	10 & 11	12/5	22 & 23
10/10	Exam II & 12	12/12	Exam IV 12/12-13

This schedule may be changed at the instructor's discretion.

## Tentative Daily Schedule Chem 10 Internet F-11

Please note that the dates are day/month/year. There is this schedule in calendar format on the Shasta College Online program

15/8/2011, Practice Discussion Post Introduce yourself,

15/8/2011, Start Chapt 1 text & notes,

15/8/2011, Take practice syllabus quiz Click on the quiz icon or on the word quizzes on the course menu to the left. Then click on the practice syllabus quiz. Take it until you get 100%. You get four tries This is the only quiz that you will get to take more than once.

16/8/2011, Start discussion 1 & element worksheet,

18/8/2011, Practice Discussion-Introduction due,

19/8/2011, Quiz 1 on first 30 elements I will give you 5 names and you give symbol and then I give you 5 symbols and you give me names. Spelling counts,

19/8/2011, Start chapt 2 text & notes,

20/8/2011, Syllabus quiz due,

21/8/2011, Disc 1 due,

23/8/2011, Disc 1 replies due,

24/8/2011, Quiz 2 due covers atomic and electron structure worksheet,  
25/8/2011, Start Chapt 3 text & notes,  
26/8/2011, Quiz 3 due covers isotope worksheet,  
29/8/2011, Quiz 4 due covers periodic table worksheet,  
1/9/2011, Quiz 5 due covers ion worksheet,  
2/9/2011, Start Chapt 4 & 5 text & notes,  
6/9/2011, Quiz 6 due covers Dot Structure worksheet,  
7/9/2011, Start Chapt 9 Read the balancing equations section page 204 and sections 5 & 7 & 9-11. The other sections are optional. If you wish you can take 2 extra credit quizzes on this optional material And of course check out my notes,  
9/9/2011, Quiz 7 due covers nuclear decay,  
12/9/2011, Quiz 8 due covers balancing equations worksheet,  
16/9/2011, Exam 1 available and covers chapters 1-5 & 9. 50 questions from the study guide. You can use the class periodic table and ion chart only. You have one try and 50 minutes. Good thinking,  
18/9/2011, Exam 1 due and must be submitted by 1155 PM,  
19/9/2011, Start on assignments 1 & 2 which are due on 9-28. Assignment 1 (quiz 10) is a list of organic compounds classified by functional group by reading ingredient(not nutritional!) labels from common household products. Assignment 2 (quiz 11) is a list of recycling codes and polymer names from plastic materials in your house,  
19/9/2011, Start Chapt 6 text and notes,  
20/9/2011, Optional quiz 1 & 2 available. Optional quiz 1 is on converting grams and number of atoms to moles and vice versa and simple mole to mole stoichiometry. Optional quiz 2 is on mole to gram and gram to gram stoichiometry. You allowed your periodic table and a scientific calculator only,  
21/9/2011, Quiz 9 due covers electrolyte worksheet,  
22/9/2011, Start Chapt 7 text and notes,  
23/9/2011, Start Chapt 21 text and notes,  
24/9/2011, Start Chapt 8 text and notes,  
28/9/2011, Assignments 1 & 2 due. Assignment 1 (quiz 10) is a list of organic compounds classified by functional group by reading ingredient(not nutritional!) labels from common household products. Assignment 2 (quiz 11) is a list of recycling codes and polymer names from plastic materials in your house,  
30/9/2011, Start on Assignment 3 due 10-10. Assignment 3 (quiz 12) is a list of inorganic compounds from reading ingredient (not nutritional!) labels from common household products,  
4/10/2011, Start Chapt 10 text and notes,  
6/10/2011, Start Chapt 11 text and notes,  
10/10/2011, Assignment 3 due. Assignment 3 (quiz 12) is a list of inorganic compounds from reading ingredient (not nutritional!) labels from common household products,  
12/10/2011, Exam 2 available and covers chapters 6-8 & 10-11 & 21,  
13/10/2011, Exam 2 due,  
14/10/2011, Start Chapt 12 text and notes,  
18/10/2011, Start Chapt 13 text and notes,  
19/10/2011, Optional quiz 1 & 2 due. Optional quiz 1 is on converting grams and number of atoms to moles and vice versa and simple mole to mole stoichiometry. Optional quiz 2 is on mole to gram and gram to gram stoichiometry. You are allowed your periodic table and a scientific calculator only,  
19/10/2011, Start Discussion 2 Chemical Free? Due 10-24,  
24/10/2011, Disc post 2 due,  
25/10/2011, Start Chapt 14,  
26/10/2011, Disc post 2 replies due,  
27/10/2011, Optional quiz 3 available. Due 11-13 This quiz covers calculating pH from molarity and molarity from pH. It also covers calculating the voltage of a redox reaction. You are allowed your periodic table and calculator only,  
28/10/2011, Start Chapt 15,  
31/10/2011, Start disc 3 Carbon footprint and your actions Due 11-4,  
3/11/2011, Start Chapt 16,  
4/11/2011, Discussion 3 post due,  
8/11/2011, Disc 3 replies due,  
9/11/2011, Start chapter 17,  
11/11/2011, Veterans Day holiday,  
13/11/2011, Optional quiz 3 due. This quiz covers calculating pH from molarity and molarity from pH. It also covers calculating the voltage of a redox reaction. You are allowed your periodic table and calculator only.  
14/11/2011, Exam 3 available Covers chapters 12-18,  
15/11/2011, Exam 3 due,  
16/11/2011, Start discussion 4 Consumer safety Due 10-21  
17/11/2011, Start Chapt 18,

18/11/2011, Start disc 5 Check this now! Go to the discussion articles section & click on the disc 5 directions for seek find and share  
Due 11/28,  
21/11/2011,Disc. post 4 due,  
21/11/2011,Start Chapt 19,  
22/11/2011,Discussion (MSDS) that is quiz 12 available Due 12/3,  
23/11/2011,Disc 4 replies due,  
24/11/2011,Happy Thanksgiving,  
28/11/2011,Disc 5 due Go to the discussion articles section and click on the disc 5 directions for seek find and share,  
29/11/2011,Start chapt 20,  
11/30/2011,Disc. 5 replies due,  
1/12/2011, Start discussion 6 I would like you to consider chemistry's impact on your personal life. Please discuss 3 "things" with  
which chemists are involved that have made the greatest impact on your personal life. Due 12-4,  
2/12/2011,Start Chapt 22,  
2/13/2011,Discussion (MSDS) that is quiz 12 due,  
4/12/2011,Disc. post 6 due,  
5/12/2011,Start Chapt 23,  
5/12/2011,Start discussion 7 In this discussion I would like you to tell us the 3 most interesting facts or concepts that you learned in  
this class and the one most boring one. Due 12-8,  
6/12/2011,Disc 6 replies due,  
7/12/2011,Disc. post 7 due,  
9/12/2011,Disc. 7 replies due.  
11/12/2011,Exam 4 available,  
12/12/2011,Exam 4 due,  
13/12/2011,You're done :) Happy Holidays!!,

## SCIENCE LEARNING CENTER

### *Room 1626*

The Science Learning Center offers a comfortable study environment and a variety of resources to assist students in any of the Science classes. There are computer programs and filmstrips that cover specific topics, old tests to look at, microscopes and slides to use and tutors to offer help.

Tutors can help you to initiate good study habits and procedures to maximize your study time. They can also help to clarify any confusing concepts. The tutoring is free and is done by students who have already successfully completed the course, often with the same instructor. When there is interest, we run study groups that are led by tutors.

### ***OTHER RESOURCES AVAILABLE***

***XEROX MACHINE*** A copy machine is available in the computer area of the Learning Center for .10 per copy.

***COFFEE CLUB*** Coffee is always brewing for Coffee Club Members. To join, there is a 4.50 per month charge or pay .50 by the cup. Occasionally, there is also Hot Chocolate for .15 per packet. Such a deal!

***OFFICE SUPPLIES*** For your use, we have a paper cutter, stapler, scissors, and tape. Colored pencils are also available.

***STUDYING IN THE SLC*** There are three different study environments available

**GENERAL AREA** This is a quiet area with plenty of room to spread out.

**STUDY GROUP AREA** We have a special area, separated from the rest of the Center by a partition, where groups like to study together.

**SILENT AREA** For those students who don't like distraction but want to make use of the Learning Center, this is a perfect spot. It is not quiet, but SILENT.

The SCIENCE LEARNING CENTER is a friendly, helpful, encouraging environment which can become your home away from home.

### **ADDING A CLASS**

Students may add a full-term class through the fourth week of the term.\* After the first two class meetings, approval of the instructor is required to add the class, which includes both the signature of the instructor and the first date of attendance. **IT IS THE STUDENT'S RESPONSIBILITY** to pick up the form from the Admissions and Records Office and take it to the instructor for approval. The student must then return the form to the Admissions and Records Office or Extended Education Center for processing before the add is finalized.

### **DROPPING A CLASS WITHOUT RECORD**

Students may drop a class, and have no notation appear on their transcripts, through the fourth week\* or 30% of the term for classes less than a semester in length. **IT IS THE STUDENT'S RESPONSIBILITY TO DROP CLASS (ES)**. The necessary forms are available from Admissions and Records, Extended Education Centers, or by mail. If a student intends to drop a class and stops attending but fails to file the necessary forms, a failing letter grade may be assigned by the instructor.

### **WITHDRAWING FROM A CLASS WITH A "W" GRADE**

Students may withdraw from a class after the official "drop" date and up through the fourteenth week or 75% of the term for classes less than a semester in length. The notation "W's" will appear on the student's transcript and will not be used in calculations of grade point average. Excessive "W" shall, however, be used as factors in probation and dismissal procedures. **IT IS THE STUDENT'S RESPONSIBILITY TO OBTAIN FORMS AND SUBMIT THE NECESSARY PAPERWORK TO WITHDRAW FROM A CLASS**. Forms are available from Admissions and Records, Extended Education Centers, or by mail. Students who have not dropped or withdrawn from a class before the end of the fourteenth week or 75% of the term will be assigned a course grade.

### **ATTENDANCE**

Students are expected to attend all class meetings. A student who fails to attend the first meeting of a course without notifying the instructor may be dropped from the class. In addition, an instructor may drop a student during the first 30% of the term for excessive absences. Nevertheless, **IT IS ALWAYS THE STUDENT'S RESPONSIBILITY TO OFFICIALLY DROP OR WITHDRAW** from the class. Students who fail to file the necessary forms, even though they stop attending class