Computer Information Systems

Western Kentucky University

SYLLABUS vSP12

Course: CIT 352 DATABASE ADMINISTRATION II

Faculty: Mark Revels, Ph.D.

Course Description

This technology-enhanced course provides an in-depth exploration of the use of structured query language in typical use of data control, data manipulation, and data definition.

The course will be held completely online through eCourses.

Change to reflect 8edition…

Topics and Objectives

Introduction to Premiere Products and Henry Books & DB Design

- You will examine the requirements of Premiere Products, a company that will be used in the examples throughout the text.
- You will also examine the database requirements for Henry Books as featured in the end-of-chapter exercises.
- Finally, you will download, install, and familiarize yourself with MySQL

An Introduction to SQL

- Understand the concepts and terminology associated relational databases
- Create and run SQL commands in Oracle, Microsoft Access, and MySQL
- Identify and use data types to define columns in SQL tables
- Understand and use nulls
- Add rows to tables
- Describe a table's layout using SQL.

Single-Table Queries

- Retrieve data from a database using SQL commands
- Use compound conditions
- Use computed columns

- Use the SQL LIKE operator
- Use the SQL IN operator
- Sort data using the ORDER BY clause
- Sort data using multiple keys and in ascending and descending order
- Use SQL aggregate functions

Multiple-Table Queries

- Use joins to retrieve data from more than one table
- Use the IN and EXISTS operators to query multiple tables
- Use a subquery within a subquery
- Use an alias
- Join a table to itself
- Perform set operations (union, intersection, and difference)
- Use the ALL and ANY operators in a query
- Perform special operations (inner join, outer join, and product)

Updating Data

- Create a new table from an existing table
- Change data using the UPDATE command
- Add new data using the INSERT command
- Use the COMMIT and ROLLBACK commands to make permanent data updates or to reverse updates
- Understand transactions and the role of COMMIT and ROLLBACK in supporting transactions
- Delete data using the DELETE command
- Use nulls in UPDATE commands
- Change the structure of an existing table
- Drop a table

Database Administration

- Grant and revoke users' database privileges
- Understand the purpose, advantages, and disadvantages of using an index
- Create, use, and drop an index
- Understand and obtain information from the system catalog
- Understand, create, and drop views
- Recognize the benefits of using views
- Use integrity constraints to control data entry

Reports

- Understand how to use functions in queries
- Use the UPPER and LOWER functions with character data
- Use the ROUND and FLOOR functions with numeric data
- Add a specific number of months or days to a date

- Calculate the number of days between two dates
- Use concatenation in a query
- Create a view for a report
- Create a query for a report
- Change column headings and formats in a report
- Add a title to a report
- Group data in a report
- Include totals and subtotals in a report
- Send a report to a file that can be printed

Class Location/Times
The class will convene using Blackboard (http://ecourses.wku.edu). You will not be required to come to class.

See the course master schedule for due dates and times.

Required Text(s)
MySQL Reference Manual (see http://dev.mysql.com/doc/#manual)

A Guide to SQL, Eighth Edition
Philip Pratt
ISBN-10: 0-324-59768-1 © 2009

Other Resources
Download and install the latest generally available (GA) release of the MySQL database from http://dev.mysql.com/downloads/

You may be required to use additional materials as assigned.

Note: I chose this text because it is relatively inexpensive, and I don't see any reason for students to pay for something that is duplicated online. So, for general direction, use the text. For detailed information, use the the MySQL manual. **You will be responsible for the complete and detailed syntax as described in the MySQL manual.**

Instructor Information
Name: Mark Revels, Ph.D.
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Phone: Voice 270-303-3019
My office hours are as follows:

T-Th, 9-11a, 1:30-3:30p

Note that if you try to contact me late on Friday, you will likely not get a response until late Sunday or early Monday.

Email is the best method of contact. I usually respond in less than 24 hours except on weekends. Please don't wait until the weekend.

Drop Date
See Term Calendars at ***http://www.wku.edu/Dept/Support/AcadAffairs/Registrar/acad_calendar.htm*** for drop dates for this class.

Welcome!
Welcome to Western and CIT 352 Database Administration II! My name is Mark Revels and I am anticipating a rewarding, fun experience for all of us with the primary focus being that you have an opportunity to learn about SQL syntax using MySQL.

If you need to discuss personal issues with me, need some coaching, or just want to discuss general topics, please send an e-mail message to my faculty e-mail address given above or call me (although we may play telephone tag on occasion). PLEASE let me know which class you are in and how late I may call you back (and what time zone you're in).

Also, please do not email or call with questions just hours or minutes before an assignment is due. I highly suggest that you review assignments early in the week in order to obtain clarification.

Note that this is a difficult class, with a LOT of material to cover in the expedited format. Please be sure to keep up with the assignments.

Now more about my qualifications…

Instructor Bio
I am a seasoned information systems professional and educator with over fourteen years of practical, hands-on information technology and management experience. My last professional engagement was at the director level with Fruit of the Loom (FOL), a billion-dollar multi-national manufacturer, where I was responsible for application development and support of offshore inventory/logistics systems and all manufacturing applications. In this position I directed a staff of over twenty people wherein I was responsible for the development of departmental standard operating procedures; coordination of group Y2K remediation efforts; management of an e-procurement/computerized maintenance management enterprise-wide project; and direction of multiple e-commerce initiatives including the EDI group and the Internet development team.

As FOL emerged from bankruptcy, I was ultimately a victim of corporate downsizing.

Some number of years ago, I started teaching online for some of the first-to-market online schools. As my motivation was to share some of what I had learned over the years, I initially only taught technology and technology management courses. However, over time I developed better online teaching techniques, got more teaching offers, and started to branch out in terms of course content. Now I have over a decade of online teaching experience, which has broadened my areas of expertise, especially in the use of multiple learning management systems. Moreover, I have experience in course development using various instructional design methods and numerous delivery modalities. This experience is reflected in my successful completion of literally multiple hundreds of online course sections.

After the FOL downsizing, I started exploring on-ground teaching options. Having been successful online, I determined that I might enjoy the on-ground experience as well. I joined Western Kentucky University (WKU) in 2003 as an assistant professor where I still enjoy academe. As it happened, WKU was interested in developing a totally online 2+2 information technology program. Given my experience, I was a key contributor in that endeavor, and the successful result is the WKU CIT Program.

From a credentials perspective, I hold a Ph.D. in technology management with an emphasis in human resource development (training) from Indiana State University. I also hold a master's in systems management with an information systems concentration from the University of Denver, and a bachelor's degree in business administration with a management major from the University of Kentucky. Additionally, I have two industry certifications: one in information systems (Institute for the Certification of Computing Professionals) and another in manufacturing and operations management (The Association for Operations Management). I am also a Certified Online-Course Peer Reviewer (Quality Matters), and I sit on several review boards for journals such as Informing Science and Information, Journal of Issues in Informing Science and Information Technology, and Information Technology Education.

My dissertation research employed empirical research methods on undergraduate participants to explore the use of computer mediated communication (CMC) as a surrogate for face-to-face interaction with CBT trainees. In addition to the use of CMC with trainees, I am also interested in the use of emerging technologies with online learners. This is reflected in presentations made at the Academic Business World, Instructional Technology Council meetings, and others. In addition, my research may be found in the following publications and others:

- *Knowledge Management: Research & Application*
- *The Leadership & Organizational Management Journal*
- *The Journal of Executive Education*
- *The Global Education Journal*
- *The Online Journal of Distance Learning Administration*

I am dedicated to helping you reach your learning goals in this class. As such, I am always happy to help; please let me know if you have any questions :-)

Grading Policies

Assignment Schedule

Practice is one of the best ways to learn SQL (or any other language). **Therefore, you will be writing a LOT of SQL in this class**. As a result, there will be several learning activities for each chapter.

The learning activity weekly format is described as follows:

1. You are to read the assigned text material and any other posted ancillary materials (videos, etc.). You should also review the MySQL Manual whenever a new SQL statement is covered in the text. This is important because the text does not cover the syntax in sufficient detail. You will be responsible for the complete and detailed syntax as described in the MySQL manual. For these reading assignments, there are no due dates and no points.

2. You are to complete the Discussion Questions (DQs, as assigned in the main weekly discussion board) and post questions by Wednesday, responses by Sunday. You are also to post a 50-word summary of what you learned during the week to the main weekly discussion board by Sunday. This learning assignment, along with participation, is worth 10-points weekly.

3. You are to complete all of the exercises for each case in the chapters (except Chapter One. Only complete the Henry Books exercises this week. Note there is no SQL). You should post the results (after Week 1, SQL script and any server output, pasted into a Word doc) to the Blackboard assignment link (in Assignments) by Sunday (see Point/Grade Correlation table for more information). Please copy any SQL scripts and screenshots of output to ONE Word document when posting (see http://www.wikihow.com/Take-a-Screenshot-in-Microsoft-Windows for how to make screenshots). Note that the publisher's Website has data files and scripts to help build the DBs used in the cases. See http://www.course.com/ and search on the name of the text. This learning assignment is worth 25-points per chapter.

4. Practice quizzes are assigned each week during the term. These will be due on Sunday of the week in which they are assigned and are worth 40-points each. As these are learning activities, you should prepare by reading the text, reading the MySQL manual, reviewing any provided ancillary materials, and practicing heavily. Answers are provided when you finish. You may use these to review for the final exam. NOTE: The Week 1 quiz is an assessment of your basic DB knowledge. You will receive 35 points for taking the exam regardless of your score. If you score less than 70%, you need to review basic DB concepts before continuing with the course.

Final Exam

The one-hour final assessment is **proctored**, closed-book, and closed-note. It consists of 53 questions, and is worth 515 points. It will be very similar to the quizzes, so you are encouraged to use them as a study guide.

While you may be able to use the proctor of your choice at the location of your choice, you must register with the WKU testing center in order to have your proctor approved (see http://www.wku.edu/reachu/testing%20center/Home.htm for more details). Note that you must pre-register with the testing center before taking the exam, which is usually no less than 10-days prior. I highly suggest that you register early. Final exams must be taken during final exam week (see http://www.wku.edu/Dept/Support/AcadAffairs/Registrar/acad_calendar.htm for the school's final exam schedule). You may choose Monday through Wednesday during finals week to take the exam.

For the rationale on why proctored exams are required, please see http://www.westga.edu/~distance/ojdla/summer72/rowe72.html, http://www.mtsu.edu/~itconf/proceed05/dEplion.pdf, and http://www.wku.edu/testing/Cheating%20Article.htm

IMPORTANT: The final exam is difficult. Let me say that again: The final exam is difficult. You should review the Notes on Learning Theory section of this document to help you understand what is necessary to be successful.

As the final exam is an assessment and not a learning activity, correct answers are not provided. However, if you wish to review your exam, I am more than happy to make the opportunity available to you. However, as with other on-campus final exams, I am constrained to tell you that student review can only be accomplished on-campus (Bowling Green), in a proctored environment, during the full term (Fall and Spring) following that of the exam's administration. This step is necessary to protect the

integrity of the exam.

Also, since the final exam is an assessment, your score will likely be lower than you have previously experienced with the learning activities. Therefore, after completing the exam, your overall average will likely go down, not up. This means you need to be sure and complete all of the learning activities as assigned in order to have a very high average before taking the final.

Point/Grade Correlation

Chapter	Participation	Exercises	Quizzes	Final	Total
1	10	20	35		
2	10	20	40		
3	10	20	40		
4	10	20	40		
5	10	20	40		
6	10	20	40		
7	10	20	40		
8				515	
					50
	70	140	275	515	1050

A = 105%-90%
B = 89%-80%
C = 79%-70%
D = 69%-60%
F = 59%-0

Note that grades are assigned by percentages. Scores will not be rounded. For example, a raw score of 895-points is 89.5%, which is a B.

Please be sure to review your grades right away; corrections will not be made more than seven days after the initial grade is posted.

I do not award incompletes.

Contingency Points
Sometimes uncontrollable problems occur during the course that can negatively affect a student's grade. Examples include personal issues, family issues, forgetting an assignment, encountering test questions that

are worded poorly, course errors, etc. Because I want to be fair to all students, I am giving you 50 contingency points (5%). This means that for whatever reason, you can lose 50 points and still have a 100% average. Another way of looking at it is that you can loose up to 150 points (15%) and still get an A.

Instructor Feedback
In general, I will post weekly grades no later than the Wednesday following the end of the class week. I tend to comment little if you are doing well (>80%) and comment more if you are not (< 80%). However, at any time if you have questions about any comments and/or grades, please contact me within three or four days at most while the issues are still fresh in both our minds. This will help to iron any issues out as soon as possible.

Also, if I mistakenly note you as missing any assignments and you did submit them, please immediately let me know the time and date you posted. I will be very, very happy to download the post and correct my records. I will not make changes to grades after one week of posting.

General Grading Standards
You may already know this, but…

Class grades are determined on the following basis:

A: Clearly exemplary work. The quality of work at this level could be used to demonstrate mastery of the subject matter and could serve as a model to others of the kind of superior work that can be accomplished by graduates from the school. This level of work is outstanding both in content and presentation. The student displays initiative, independence, and often originality.

B: A B represents commendable work. The work is logically organized and technically correct. A grade of B indicates an unquestioned grasp of the subject fundamentals and principles and an understanding of their significance. B work often shows initiative.

C: Adequate work. A C usually indicates that the student has presented a first-draft of his or her final project. The work is fairly logical in organization and technique, but it is incomplete. The research is insufficient to support the conclusions drawn in C level work.

D: Slip-shod is the best way to describe D level work. It demonstrates little ingenuity, integrity, or care.

F: Languishing is the level of work that deserves less than D. This level of work is poorly organized and technically faulty and demonstrates little, if any, grasp of basic facts and principles. In addition, if a student fails to complete all of the assignments in a timely manner, they are in danger of receiving an F in this course.

Exercise Grading Standards
The weekly exercises are meant to give you a more in-depth understanding of the weekly learning objectives.

The following grading criteria will be used for the exercises you will complete for our class:

- Content/development (90%): key elements of assignments covered; content is comprehensive/accurate; displays an understanding of relevant theory; major points supported by specific details/examples
- Presentation (10%): material is presented in manner congruent with requirements and conveyance of content understanding

Non-Graded Assignments
Some activities that you will complete during the course are ungraded or carry no point value (like reading assignments). However, it is very important that you complete these activities. Non-completion of these activities may negatively impact your graded work.

Incompletes
All incomplete requests must follow school guidelines. See the catalog.

Extra Credit
There is no extra credit or make-up work as the class assignments reflect what is required for successful completion of this course.

Academic Standards
I expect all students to support the same respect for individuals, commitment to issue and problem resolution, and open communication and feedback as in any learning environment.

Specifically, online students are expected to:
1. Accept responsibility and accountability for all use actions and content posted to any online classroom, public meeting or personal inbox (email).
2. Maintain the same ethical standards expected in a collaborative, academic environment.
3. Demonstrate respect for all faculty, students, and staff regardless of age,

race, gender, religion, national origin, veteran's status, disability, or sexual orientation.

In the online environment, the following will not be tolerated:

1. Harmful, threatening, libelous, or abusive content
2. Profanity of any kind
3. Copyright infringement or violation of patent, trademark, proprietary information, or confidentiality agreements
4. Misrepresentation of identity through alteration of inbox (email) names
5. Posting unsolicited advertisements to public meetings or private inboxes (no spamming)
6. Transferring computer viruses, intentionally or unintentionally, or other code that disrupts or interferes with other users' use of the online environment or personal computers, systems, or networks.

Honesty

I highly value academic honesty. A student must always submit work that represents his or her original words or ideas. If any words or ideas are used that do not represent the student's original words or ideas, then the student must cite all relevant sources. The student should also make it clear the extent to which such sources are used.

Words or ideas that require citation include, but are not limited to, all hardcopy or electronic publications, whether copyrighted or not, and all verbal or visual communication when the content of such communication clearly originates from an identifiable source.

All submissions to any public meeting or private mailbox fall within the scope of words and ideas that require citations if used by someone other than the original author.

Academic dishonesty in an Online learning environment could involve the following:

- Having a tutor or friend complete a portion of your assignments
- Having a reviewer make extensive revisions to an assignment
- Copying work submitted by another student to a public class meeting
- Using information from on-line information services without proper citation

Any of these practices could result in charges of academic dishonesty. Sanctions range from failing assignment or class grades to expulsion.

I consider academic honesty a very serious issue. I have, and will fail students that I discover are not adhering to the above guidelines.

Course Changes
Please note that old classes may be loaded in advance if the actual class launch date. If you enter the class early, you may see old material. Please be sure to check the material on the first day of class and be sure it is mine and the syllabus has a current date (see Course Location/Times section).

Class Navigation

Blackboard Button	***How Used in this Course***
Announcements	Use this area to check for timely class information. Example: interim grade announcements.
Syllabus	Course Syllabus
Staff Information	Use this area to learn more about your instructor.
Course Resources	Use this to access all course information needed by students to complete course (lectures, etc.)
Assignments	Assignment submission links and quizzes are here.
Communication	Use this area to email class members as needed. The discussion board can be found here.
Discussion Board	Use this area to go to class.
Tools	Use this area to access Drop box for assignment submittal, and for grade review.
WKU Libraries	Library link.

Technology Issues
I realize that school systems are unavailable from time-to-time. Accordingly, I will accept e-mailed assignments to my personal mailbox for time-stamping purposes only. However, once Blackboard is available to you, in order to receive a grade, the assignment must be posted to the designated discussion board or drop box as detailed in this syllabus.

Also, from time to time the Blackboard system will lock-up during a quiz or exam. If this happens, please contact me as soon as possible. I can only reset the exam, which means you will have to take it over (this includes final exams).

For comments about technology issues (for example, Blackboard problems), please contact the Vice President of Information Technology (see http://www.wku.edu/infotech/index.php?page=VP).

Participation

At the minimum, students are expected to attend the virtual classroom by logging into the discussion boards at least 4 out of 7 days of each week. Your participation grade will be measured by noting your substantive contribution to class discussion held in the weekly discussions (group work does not count toward the participation grade). Substantive means adding, enhancing, contradicting, or otherwise debating the issues being discussed in the class.

At this point I want to stress the nature of participation. Not only does participation improve your grade, it will significantly enhance your ability to meet your learning goals. The distance education environment is not a "remote control" version of the traditional classroom. Rather, it requires a completely different approach. The role of the student is to read the text and work in a cooperative manner with other students in order to clarify issues and develop understanding. It is the role of the instructor to facilitate that effort. This is one reason for the heavy emphasis on group and writing assignments; there is no classroom in which to sit and listen. This is also why traditional assessment mechanisms (tests) are not used; they would not only be open book, they would be open everything, and the assessment would effectively only test your ability to research problems and look up answers.

Again, in order to earn full credit for participation in this class, you are expected to contribute to the discussion in a substantive way. Posting assignments does not count toward participation. Please relate "real world" experiences, suggest alternative courses of action, and even disagree (if you feel so inclined). Make sure that you substantiate any comments you make with your reasons. If a comment is meant primarily for one person (perhaps the author of a discussion topic) and has little relevance for the rest of us, please post that message to the person's individual mailbox (email).

The participation grade will be determined as follows:

- making comments that refer to concepts found in the reading assignments
- offering creative contributions of examples from your experience--using examples of how you and others "do it"
- commenting in concise, crisp statements (and not going on and on, restating what others have said, over and over and over again, repeating yourself)
- contributing new and relevant information to the course discussion and from readings of the textbooks;
- commenting in a positive manner;
- building on the remarks of your fellow students;
- posing questions of your fellow students; and
- sharing websites, and other supplementary information.

IMPORTANT: Remember to be positive in your approach to others and be careful about the way things are worded. We cannot tell by your face when you are kidding, so sarcasm and critical remarks must be handled carefully.

Late Assignments
Due to the nature of this course and based upon my teaching experience, it is critical that you are timely in submitting the assignments. Since all assignments are made available before they are due, no late work will be accepted for any reason. Again, no late work will be accepted for any reason. Please do not wait until the last minute to due your assignments; no late work will be accepted for any reason.

On Your Own Zone
As all assignments are due by Sunday of the week in which they are assigned, please do not wait until Sunday evening to ask questions. Students are on their own for problems and questions over the weekend. Be sure to ask questions early.

Student Disability Services
In compliance with university policy, students with disabilities who require accommodations (academic adjustments and/or auxiliary aids or services) for this course must contact the Office for Student Disability Services in DUC A-200 of the Student Success Center in Downing University Center.

Please DO NOT request accommodations directly from the professor or instructor without a letter of accommodation from the Office for Student Disability Services.

Cancellations
If you are dropped for any reason (lack of payment, etc.), your access to Blackboard may be terminated. In this event you will **NOT** be permitted to make up on-line course assignments/activities during the time you lost access to Blackboard.

Schedule Exceptions
I will not approve any schedule exceptions.

Typical Complaints
There are generally a small percentage of students that complain about this class. Below you will find a list of the major complaints and explanations for why things are the way they are.

Complaint #1: The final exam is worth too many points

The final exam is the only proctored assessment in the class. It necessarily must represent a large percentage in order to know what you can do. This argument is an outgrowth of one of the learning theory points made in the syllabus... “Learning is evidenced by a change in behavior. In other words, if a person doesn't do anything different, then they haven't learned anything. By this

definition, it is clear that knowing something isn't the same as learning something. A teacher can tell if a student has learned by seeing what the student can do. Students must do things, e.g., homework, projects, papers, discussions, tests, etc. so that the teacher can evaluate the student's learning. Doing these things (the instructional activities) is an opportunity for the student to demonstrate their knowledge. The grade in a course (total final letter grade or grade on an assignment) is a reflection of what the student can do. This is why it is philosophically unsound to grade on effort, time on task, or anything else that doesn't directly measure what the student can do. It is also philosophically unsound to have extra credit. There is no logic to having what a student can do with addition substitute for what the student cannot do with subtraction."

Complaint #2: There is no study guide for the final exam

Most, if not all, questions on the final exam were on the quizzes. So, the quizzes are the study guide.

Complaint #3: I spent too many hours working the problems.

Excellence takes practice. Again, from the syllabus learning theory comments... "To be really good at something takes about 10,000 hours of practice. That is about 5 years at 40 hours a week. The typical school year in K-12 (13 years) is about 180 days. The amount of time spent on any subject (for example math) in K-12 is about ½ (.5) hours a day. 13 yr X 180 day/yr X .5 hr/day = 1170 hr. Even when you add college math time to this it isn't enough practice to make you a mathematician."

In a normal semester, students are expected to spend six hours studying for every three hours of class work. That's twelve hours for a biterm. Since the class is online, you should be spending fifteen hours per week per biterm CIT course.

Complaint #4: It was too hard/I don't know anything about DBs

CIT is a tough program and was designed to be difficult. Also, note that there is a prerequisite for this class and you are expected to already know about DBs.

Complaint #5: I don't like multiple-choice exams/I don't like exams/I freeze up on exams

The final exam was presented in the same format as many certification exams. You may as well get used to taking M/C exams if you plan on any technology certifications.

Complaint #6: I had an A/B/C/D going into the final, now my grade dropped

As per the syllabus: Since the final exam is an assessment, your score will likely be lower than you have previously experienced with the learning activities. Therefore, after completing the exam, your overall average will likely go down some, not up. This means you need to be sure and complete all of the learning activities as assigned in order to have a very high average before taking the final. If you do not do well in the class, you may want to consider the SM program (www.wku.edu/sm)

Complaint #7: Why do the exams have to be proctored?

CIT final exam proctoring is a departmental requirement. There are more rationales in the syllabus.

Complaint #8: Why do I have to come to Bowling Green to review my final exam?

This is a standard, university-wide procedure to help ensure that final exam integrity is protected.

Complaint #9: The teacher didn't teach me anything/I could learn this material on my own.

Teachers don't make you learn, you make you learn. Teachers provide the environment.

People learn best from peers. Peers speak the same language, are in the same boat, have similar experiences. Peers, especially those who recently learned the material, can explain the material better than any professor. Think about it. Ask Stephen King to teach you how to write. It is old hat to him; he's going to talk over your head. A teacher who has known something for a long time has a hard time remembering how they learned the material; they think it is all easy and common sense. The typical teacher ended up being a teacher because when they were a student they loved the subject, found it easy and interesting, etc. In other words, most teachers were not typical students; the way that the teacher learned (was motivated, etc.) is highly unlikely to be the way that you will learn. There is a tendency for teachers to teach the way that they were taught; doing so is usually not best for students.

Teaching is not about spouting knowledge. Teaching is very complex, but at its heart, teaching is about getting students to learn. Some teachers are able to motivate some students for the short term (like a pep rally), but like short-term memory, this motivation doesn't sustain a internalized, intrinsic, self-motive to learn. In other words, learners have to want to learn; it is very difficult (impossible for some learners) to acquire long-term application-level knowledge when the learner relies on a teacher to supply motivation. Teaching is a lot like coaching. Sure, athletes can practice on there own. But most athletes improve (learn) best when someone organizes the activities/practices/exercises and cajoles/bribes/forces/motivates the athletes to do those activities.

So, my job is to organize the course content in a way that gets students to learn, then cajole/bribe/force/motivate them to do those activities.

More Notes on Learning Theory

There are several things that many students (and teachers) don't know about learning. Many of these things are not intuitive or are counter to common beliefs. It is helpful to consider the following:

• To be really good at something takes about 10,000 hours of practice. That is about 5 years at 40 hours a week. The typical school year in K-12 (13 years) is

about 180 days. The amount of time spent on any subject (for example math) in K-12 is about ½ (.5) hours a day. 13 yr X 180 day/yr X .5 hr/day = 1170 hr. Even when you add college math time to this it isn't enough practice to make you a mathematician.

• It takes five to eight exposures (practices, etc.) to information for a typical person to internalize that information into long-term memory. Most people see or hear something once or twice and they think - "I know that." In reality the information went into short-term memory and after a short while the person cannot remember it any more. This is why practice and redundancy are necessary. Teachers try to use different types of activities (e.g., reading, problems, journals, discussion, texts, etc.) to get five to eight exposures/practices and still have the students engaged instead or bored or burnt out.

• To be able to do something with your knowledge takes practice, but mere practice is not enough. The type of practice is important. Hearing or reading something is not as good as doing. This is true in an English class or a drafting class. If a person does not have practice applying knowledge, then that person will not be able to apply that knowledge. The typical person forgets almost everything they hear. This is why traditional lecture is one of the least effective ways to teach. Additionally, the typical person forgets most of what they read. This is why most of us can't read a book and, voila, we know it. We remember and understand and are best able to apply knowledge when our hands (actually our sense of touch in general) are involved in the learning. Hence, in English we write, in math we do problems, in drafting we draft, etc.

• Lecture is not a primary mode of learning. Many people believe that the best way to learn is by hearing a lecture. Maybe the lecturer will use some audio-visual materials so the student will be seeing and listening (using their eyes and ears). Most students assume that if the lecture is good/exciting/etc. enough they will learn and can pass a test. In reality, people do not learn any more from exciting lectures than they do from boring lectures; students just feel better about what they didn't learn.

• Reading is a lot better than lecture but it usually cannot be the sole method, i.e., reading is necessary but other activity and practice is required. Some text books (just like some novels) are more interesting to read than others but the amount of long-term learning from merely reading a "good" text is not much different from reading a boring one. Scholarly reading is tedious; slow reading and re-reading is required. You can't read a text at the pace of reading a novel (you can, but you will not learn). Note taking improves understanding and retention. Doing homework and otherwise applying the information in the text greatly improves understanding and retention.

• Learning is evidenced by a change in behavior. In other words, if a person doesn't do anything different, then they haven't learned anything. By this definition, it is clear that knowing something isn't the same as learning

something. A teacher can tell if a student has learned by seeing what the student can do. Students must do things, e.g., homework, projects, papers, discussions, tests, etc. so that the teacher can evaluate the student's learning. Doing these things (the instructional activities) is an opportunity for the student to demonstrate their knowledge. The grade in a course (total final letter grade or grade on an assignment) is a reflection of what the student can do. This is why it is philosophically unsound to grade on effort, time on task, or anything else that doesn't directly measure what the student can do. It is also philosophically unsound to have extra credit. There is no logic to having what a student can do with addition substitute for what the student cannot do with subtraction.