July 27, 2015

Dear Students,

Welcome to the Johns Hopkins University! I will be your instructor for Freshmen Experiences in Mechanical Engineering and would like to tell you a little about what to expect from the course and how you should prepare for it before arriving on campus.

*Freshman Experiences in Mechanical Engineering* will introduce you to the tremendous field of mechanical engineering. Mechanical engineers develop and apply new technologies in all kinds of areas, such as energy generation, transportation, robotics, biomechanics, and nano-scale devices. The course topics include specific technical skills and math/physics concepts useful for engineers, engineering design and creativity, and professional development. Toward the end of the semester, we will have a group design project and competition. In previous years, students designed and built mousetrap-powered boats, cable-cars, climbing machines, and art-making devices.

You will also be learning how to use MATLAB throughout the course. MATLAB is a very powerful computing tool and you will use it in many of your future engineering courses at Hopkins. I strongly suggest that you start to get familiar with it before you arrive to class in August, as this will relieve a significant amount of stress for you later. As a JHU student you will be able to download and install MATLAB on your personal computer for free. I will email you the details of this process in early August.

There are many short videos at the Mathworks® (the company that makes MATLAB) website to help get you started with MATLAB. I recommend you watch the following ones before classes start: MATLAB Overview, Getting Started with MATLAB, Working with Arrays in MATLAB, Introducing MATLAB Fundamental Classes, Using Basic Plotting Functions, Analyzing and Visualizing Data with MATLAB, Writing a MATLAB Program, and Working in The Development Environment. All of these videos can be found at [http://www.mathworks.com/products/matlab/videos.html#](http://www.mathworks.com/products/matlab/videos.html#).

I hope you enjoy the remainder of summer and I look forward to meeting you soon. If you have any questions (e.g. what kind of computer to purchase for college), feel free to email me at marra@jhu.edu.

Regards,

Steven P. Marra
Senior Lecturer
Welcome to Introduction to Materials Chemistry (510.101)! This course is an introduction to the fundamentals of chemistry. The main topics to be covered are atomic and molecular structure and bonding, dot structures and VSEPR geometries, the periodic table, stoichiometry, chemical equations, the gas laws, the law of mass action and chemical equilibrium, acids and bases, chemical thermodynamics, basic atomic packing of solids and electrochemistry. Examples will be drawn from industrial practice, energy generation and storage, and from emerging technologies (nanotechnology and biomaterials). When possible, I try to focus on solid materials you may use in your work.

Much of Introduction to Materials Chemistry may be a review of high school chemistry. If you received an AP score of 5 in Chemistry, you may wish to place out of this course.

The book we will be using for the class is “Chemical Principles: Quest for Insight.” I will be using the 6th edition for the lectures. The 5th edition is only slightly different than the 6th edition and may be used. You do NOT need the sapling learning card that is sometimes sold with new editions of the textbook. I will be using clickers this year, so you will need to buy one if you don’t have one.

This is a fast moving course. If you did not take a chemistry course last year or feel that you need to brush up on your chemistry, I strongly suggest that before arriving at Hopkins you:

1. Read the following sections in the Fundamentals Section of the Course book
   A: Matter and Energy, pages F5-F13
   E: Moles and Molar Masses, pages F37-F43
   G.3 Concentration, pages F54-F58
   H.2 Balancing Chemical Equations, pages F62-F65

For your convenience, I have put these sections on Blackboard under Course Content. Information regarding how to log on to Blackboard can be found at http://www.cer.jhu.edu/pdf/bb9/Getting_Started.pdf

2. Review the three short (approximately 5 minutes each) videos posted on Blackboard under Course Content.

Before class begins, I would like you to take the Fundamentals Quiz found on Blackboard under Student Assessment. The score for the fundamentals quiz will not be included in your final score. I will use it to determine your chemistry background knowledge and what I need to cover in the lectures.

Information regarding how to log on to Blackboard can be found at http://www.cer.jhu.edu/pdf/bb9/Getting_Started.pdf

I look forward to seeing you in August! If you have any questions, feel free to contact me.

Regards,

Patty McGuiggan
mcguiggan@jhu.edu
balancing your college schedule

Attending classes, studying, working a part-time job, participating in extracurricular activities, and finding time for friends, family and yourself can be a hard schedule for college students to balance. The following time management tips will help you stay balanced and stress-free.

1. Set Goals. Determine exactly what you want to accomplish. This may be what you want to accomplish in a day, a week, a semester, or even longer. What are your academic goals? Maybe you want to have your Psychology paper finished by the end of the week so you can enjoy your weekend. Maybe you have a goal of going to graduate school, but you must first perform well in all your undergrad classes. What are your extra-curricular goals? Do you want to join a sorority or fraternity this semester? How much time are you willing to commit to your extra-curricular activities? Do you have any personal goals? Maybe you want to expand your social circle or start exercising. By setting goals, you will be more inclined to follow through with them and accomplish your tasks.

2. Prioritize. Once you know what needs to be accomplished, you must prioritize your tasks. This means figuring out which tasks are most important and which ones can be put on hold. Be sure to stay focused on the most important task before you move on to the next ones. To help you better prioritize your tasks, you may want to number them in order of importance. For instance, if you have a paper that is due in a week and a small group project that is due in a month, it makes more sense to put your paper at the top of your priority list followed by your group project.

3. Organize. Being organized will help you achieve your goals in a timely manner. You need to organize your tasks so you will know what needs to be accomplished and when they need to be accomplished. Create a weekly calendar that includes your schedule for classes, study time, social events, club meetings, exercise time, and any other time necessary to achieve your goals. Also, be sure to include assignment due dates in this calendar so you don't miss a deadline. Abide by this calendar every week so you will develop a regular routine while learning how to manage your time.

4. Avoid Procrastination. Procrastination is the main downfall of achieving time management skills. If you plan on doing an activity, stick to your schedule; don’t put it off until tomorrow. Doing so will only cause stress over trying to complete the task in time. By setting predetermined goals and prioritizing them, you will be less inclined to procrastinate.

5. Utilize Spare Minutes. Do you ever find yourself aimlessly waiting on an activity to start or on someone to meet you? If so, you need to start using those extra minutes wisely. For instance, if you find yourself waiting on a class to start with nothing to do, consider starting on those reading assignments from your last class or begin thinking about a topic for your Philosophy paper. By accomplishing small tasks while you're waiting, you will find that you have extra time to complete those larger tasks when you actually start on them.

6. Know When You’re Most Productive. Everyone has a time period during the day when they are most productive. Maybe you get more tasks accomplished in the morning than the evening or vice versa. Use the times when you have the most energy to accomplish the tasks that are more demanding, such as schoolwork. Use the times when you have less energy to work on tasks that are less challenging, such as running errands. You will notice that you'll get more tasks accomplished throughout the day by implementing this strategy into your time management plan.

We all probably wish that there were more hours in a day, but since that is impossible, we must make the best use of the hours that we do have. By utilizing the above-mentioned steps, you will be on your way to achieving better time management skills and becoming an all-around better college student.
Many of the skills and qualities you've developed in your extracurricular activities are useful to you as a college student. If you're facing an academic challenge and can’t figure out how to tackle it, you might take a cue from your extracurricular experiences. Whether you play an instrument or a sport, perform in the theater or in an *a cappella* group, the skills you’ve learned from these activities can help you succeed in your classes too.

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<tr>
<th>ACTIVITIES</th>
<th>ACADEMICS</th>
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<tbody>
<tr>
<td><strong>Develop discipline and focus</strong></td>
<td>You can benefit from minimizing distractions and training yourself to study when and where you are productive</td>
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<tr>
<td>You know the importance of getting in “the zone” and blocking out all distractions in order to perform at your best.</td>
<td>Daily attention to each course will keep you on top of assignments and help you retain what you are learning.</td>
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<tr>
<td><strong>Do something every day</strong></td>
<td>Daily practice is necessary for you to perform and excel—no matter what the activity may be.</td>
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<td>College work frequently presents challenges to students who have breezed through high school. You can meet those challenges by honestly assessing how you need to grow and working to develop new skills.</td>
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<tr>
<td><strong>Acknowledge your weaknesses and strive to improve</strong></td>
<td>Like everyone else, you achieve success by capitalizing on your strengths. But you also know that you have to work—sometimes quite hard—on overcoming your weaknesses.</td>
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<td>Like everyone else, you achieve success by capitalizing on your strengths. But you also know that you have to work—sometimes quite hard—on overcoming your weaknesses.</td>
<td>Resolving to achieve a big goal like “I want to do better in Orgo” isn’t nearly as effective as setting out smaller, achievable goals like “I’m going to review my notes every day” or “I’ll go every Tuesday to the Chem Study Hall.”</td>
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<tr>
<td><strong>Set goals and work with them</strong></td>
<td>You did not excel in your field by simply hoping it would happen. You did it by setting out to do it and meeting small goals in order to achieve your ambition.</td>
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<td>Mentors are everywhere: faculty, graduate students, and even fellow students. Make connections with people and not (just) grades.</td>
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<td><strong>Learn from a mentor</strong></td>
<td>All performers benefit from the guidance, support, experience, and rigor that coaches and teachers provide.</td>
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Time Management Tips for College & University Students

Most students enter college with poor time management skills. To be successful during college, you will have to manage your time effectively.

Students who managed time well during high school often struggle when they begin college. Students are overwhelmed with large course loads, extracurricular activities, and other social activities.

College classes are typically held 2-3 times a week. As a result, students often put off homework assignments. Many students procrastinate to the point where they’re too stressed to complete delayed assignments.

Utilize these tips to improve time management skills:

- **Set your Priorities** – Set goals and develop steps to reach them. Identify non-essential activities that you can spend less time participating in. When setting daily goals, list everything on paper in order of importance that must be completed.

- **Limit Diversions** – Schedule time to relax and recreate to avoid unexpected diversions. When studying, set your phone on silent, study in quiet rooms, and let your friends know when you’ll be studying.

- **Eat Nutritious Food** – Busy and stressed college students often eat food lacking nutrients. As a result, they lack the energy necessary to concentrate during class and study sessions. Eat plenty of fruits, vegetables, complex carbohydrates, and protein-rich food to have the energy to function efficiently throughout the day.

- **Share Responsibilities in Study Groups** – One student often assumes the bulk of responsibility in study groups. Students within groups should share responsibilities to prevent individual burnout.

- **Always Attend and be Prepared for Class** – Don’t miss class or be excessively tardy. Read assigned readings before class begins, so you can participate in classroom discussions and ask questions. Students who complete assigned readings before class typically get more out of lectures.

- **Take Responsibility** – To manage time effectively, you must practice self-discipline. Don’t make excuses to procrastinate homework. Schedule recreation with friends in advance.

- **Don’t Overburden Yourself** – You must study hard to succeed in college, but students often put too much pressure on themselves and never have fun. Schedule periodic breaks to relax and collect yourself. Be sure to exercise regularly and have fun with your friends.

When planning daily activities, do what’s best for you. Some students benefit from detailed plans, while others can get by with loose ones. Learn what works best for you and adjust accordingly.

Students who develop effective time management skills are typically successful and happy.