CRSN 15A - Summer 2018
STEM Essentials

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Objectives

The goal of this course is to introduce tips and techniques that will supplement and expand your existing repertoire of science/math problem-solving skills. The material covered here will complement your other science and math classes, helping to maximize your performance in those courses and, more importantly, aid in your development as a confident learner and future expert in your subject.

You will learn the science behind how the brain learns and how you can design your study habits to take advantage of that. You will also develop and practice effective strategies for solving science and math problems. All of this will be embedded within a focus on metacognition, a fancy word that essentially describes how you actively monitor the progress of learning. It involves steps like planning your study approach, monitoring the effectiveness during the process, reflecting on and evaluating the success of the strategies that were used, and adopting a "growth mindset" to provide a positive outlook on learning, to put both failure and success in context.

Becoming an expert in your chosen subject area takes experience and practice, which won't end at the conclusion of this course or even when you graduate from UCSC. This course will boost your learning skills, helping you get the most out of your UCSC education and laying the groundwork for success as a life-long learner.

Expectations

We aim to keep the workload as light as possible, while still providing sufficient depth to maximize your skill development. There will be a short reading for most weeks; you should do the assigned reading before viewing the online lecture and consider how the content relates to your experience or could be applied in your other courses. Each class will consist of a pre-quiz on the assigned reading, a lecture that you will view online, a graded online discussion forum and a homework assignment to be submitted online. The lectures will begin with an overview of the reading. The rest of each lecture will be devoted to introducing you to techniques to develop and practice your learning skills. All we ask is that you be engaged in the material and put in a sincere effort in quizzes and discussion forums and thoughtfully and carefully complete all homework assignments. The time spent on all class activities should average ~ 12 hours per week (for a 10-week quarter it would be 6 hours but this is condensed into 5 weeks) but may be less in some weeks depending on the topic.

Grading

Grades will be primarily based on participation in discussion forums and writing assignments. Weekly discussion participation will account for 30% of your grade, homework assignment completion 50%, pre-quizzes on weekly readings 10% and the completion of a small research paper 10%.

SCHEDULE

Date	Activities
Week 1	INTRODUCTION; REFLECTION ON STRENGTHS AND CHALLENGES Pre-reading: https://www.edutopia.org/neuroscience-brain-based-learning-neuroplasticity TIME MANAGEMENT
Week 2	Pre-reading: Evidence-based study methods http://journals.sagepub.com/doi/pdf/10.1177/1745691616645770 EVIDENCE-BASED STUDY TECHNIQUES GROWTH MINDSET
Week 3	Pre-reading: Embracing mistakes: (https://www.edutopia.org/blog/teaching-students-to-embrace-mistakes-hunter-maats-katie-obrien) PROBLEM SOLVING Pre-reading: Instructor will email class articles to read and review SOURCE EVALUATION AND EVIDENCE BASED ARGUMENTS
Week 4	Pre-reading: Feedback as a learning experience (http://greatergood.berkeley.edu/article/item/how_to_help_kids_overcome_fear_of_failure) PRACTICAL DATA ORGANIZATION, EXCEL, AND FIGURES REVIEWING AND CRITIQUING ARGUMENTS
Week 5	Pre-reading: Test taking tips (https://pennstatelearning.psu.edu/test-taking-tips) TEST TAKING STRATEGIES Pre-viewing: Discipline and keeping to goals (https://www.youtube.com/watch?v=PPQhj6ktYSo) LONG TERM GOAL SETTING AND SUSTAINABLE STRATEGIES FOR ACHIEVEMENT