Application for Sabbatical, for Academic Year 2022-23

Oxnard College

Application Deadline: October 15, 2021 at 5 pm.

Jacquelyne Lan Ta

October 12, 2021

Mathematics Department

Math, Science, Health, PE and Athletics Division

Carolyn Inouye
_____
Name of Dean   *Carolyn Inouye*
                                                  digital signature

I have notified my dean of my intention to apply for a sabbatical for (choose one)

__X__ Fall 2022

_____ Spring 2023

On Sept. 27, 2021 (date of notification to Dean). Email notification is of course the best way to do it.

Application for Sabbatical, Academic Year 2022-23
Please type and submit as an attachment

Full name as it appears on your work records <u>Jacquelyne Lan Ta</u>

Number of years of continuous full-time service at VCCCD: <u>6 years</u>

Number of years of continuous full-time service at OC: <u>6 years</u>

Have you ever had a sabbatical at VCCCD? <u>No</u> (type yes or no)

How many years ago was your last sabbatical? <u>N/A</u>

(Please continue to the next page to write your proposal; you may make each section as long as you wish, but please see the examples on page 1 of this packet)

Project Description

Sabbatical Proposal for Fall 2022

Academic Study at CSUCI and Video Content Creator

The purpose of this one-semester sabbatical proposal is two-fold:

(1) Engage in academic study at a regionally accredited institution of higher education per Sabbatical Leave Article 8.6.C. "No less than six units of course work or equivalent research per semester shall be acceptable from a regionally-accredited institution of higher education."

I will enroll in two math courses at CSU Channel Islands: Math 140 Calculus for Business Applications and Math 329 Applied Statistics for Business and Economics.

My goals are to validate the academic rigor and quality of instructional practice for our college students. I will also compare textbooks and course content at CSU Northridge and California Lutheran University on their academic rigor for Business Calculus.

(2) Collect, evaluate, and create online 5-7 minutes videos specifically for Math 055S Algebra Support for Statistics and Math R066S/Math R106 Business Calculus with Algebra support course. I will use my applied math background and academic study to enhance student learning and engagement.

Oxnard College Mathematics Department has undergone two major transitions. The first was the remediation of Algebra courses under Assembly Bill 705. Assembly Bill 705 was written to clarify existing regulation and ensure that students are not placed into remedial courses that may delay or deter their educational progress unless evidence suggests they are highly unlikely to succeed in the college-level course. The mathematics department has redesigned existing courses to increase the number of hours in the classroom and include algebra support topics specifically for Statistics and Business Calculus. I am one of the first instructors to teach both redesigned courses: Statistics with Algebra Support and Business Calculus with Algebra Support.

The second transition was the conversion of in person math courses to completely online courses due to the COVID-19 pandemic. For the current fall 2021 semester,

the math department was able to balance the number of in person and online courses due to the vaccine availability and better in person safety measures. Both in person and online courses are full, and students are pleased with the options of flexibility that online or hybrid courses can offer for their busy schedule. When using the online or hybrid learning methods, high quality math videos enhance learning and student engagement. When in person classes resume, the videos will also serve a great purpose. For example, math instructors can use math remedial videos to further assist struggling students and use in class time to effectively teach math new topics.

With the previously mentioned changes and as one of the first instructor to have taught the support courses the last 3 years, I have learned our students continue to favor options for both online learning and hybrid courses. For this reason, it is necessary to re-evaluate the two most impacted courses: Math R055S/105 Statistics with Algebra Support and Math R066S/160 Business Calculus with Algebra Support. It is also necessary to evaluate the algebra topics in support courses because it is important that students master basic skills and be able to extend their knowledge as they prepare for more advanced work.

I propose a one-semester sabbatical with the opportunity for (1) academic study at CSU Channel Islands to learn new topics and tools for traditional classes that will be useful for online and hybrid math courses, and (2) video content creation to accommodate the online and hybrid methods and practices of teaching. The overall student experience combines activities and interactions with technology, in class problem solving, and personal interaction. I plan to enhance the students experience by improving these physical, emotional, and social interactions. My learning experience from Business Calculus and Statistics for Business and Economics will provide me with additional academic rigor and allow me to improve my student's learning experience. To achieve higher success rates, students must be engaged in activities that are appropriate to their level of learning.

The results of this one-semester sabbatical project will improve my knowledge and experience as an instructor, increase the quality of the Oxnard College Statistics and Business Calculus courses, and increase the overall student experience and success rate. Not only will the high-quality content math videos be useful for online and hybrid courses, but also for traditional in person courses too.

Your background as it relates to the project and to your role at Oxnard College

Before I found my love for teaching, I worked in Actuary and Underwriting, Land Development, and for NASA under an internship. As an Actuary, I assisted in

pricing new medical health plans using mathematical modeling and evaluated risks using statistics methodology. As a Cost Estimator for Land Development, I analyzed and organized data using Global Positioning System (GPS), AutoCAD, and Excel. I calculated and prepared earthwork analysis on proposed Civil Engineering plans. As an intern for NASA, I had the opportunity to explore different math applications in science and engineering, including Geology and Physics. My experience with applied mathematics has enabled me to design a curriculum using real-life applications and has helped me foster enthusiasm in the classroom.

I have enjoy being a Full-Time Tenured Math Instructor at Oxnard College, teaching students from different cultural backgrounds with a wide range of math skills. I have designed and taught math courses ranging from Basic Math to Business Calculus. I have always been passionate about teaching math, and I enjoy helping students develop their mathematical skills and discover how math is used in their everyday lives. I deeply respect the students and the multi-cultural diversity that makes Oxnard College a unique campus. It is important to me that I keep up to date with the latest research on student learning, technology tools for the classroom, and new curriculum resources.

In 2018, due to my background in applied mathematics, I had an opportunity to teach Math R106 Business Calculus and Math R105 Statistics. It is worth noting that there are always more than enough Statistics courses available to serve our student's needs, but only one section for Business Calculus per semester. Since 2018, both enrollment and number of sections offered has increased, see Figure 1. We currently have students from California Lutheran University, CSU Channel Islands, and Moorpark College, favoring our Business Calculus and Business Calculus with Algebra support course.

Year	Enrollment	Number of Sections
2016	22	1
2017	34	1
2018	53	1
2019	101	2
2020	91	2
2021	98	2

Figure 1: Data collected from schedule of classes.

As the enrollment number increases for both our Algebra support Business Calculus and Statistics, it is important to evaluate our course contents, the algebra support topics, and teaching effectiveness. Our algebra support courses are vital for student success in Statistics and Business Calculus transferred courses. The algebra support courses align with the Assembly Bill 705 that strongly recommended for students that are pursuing non-STEM majors to increase the likelihood that students will pass the transfer-level courses.

My background in Applied Mathematics and as one of the lead Instructor for the algebra support courses under Assembly Bill 405 initiative, I am the right math Instructor to work on this much needed sabbatical project. I plan to expand my applied mathematics knowledge, continue my in class learning experience, and continue developing the online and hybrid curriculum tools I have created for the algebra support courses.

Project Objectives

There are two objectives of this one-semester sabbatical project:

(1) Academic study at CSU Channel Islands to learn new topics and tools for the classroom. Engage in real life training relating to engaging students with real life application problems using business calculus and statistics.

(2) Video content creation to accommodate and reflect the need for algebra support and Business Calculus topics. The created high-quality content videos will serve the student's needs for online and hybrid courses. These videos will also be valuable for in person traditional courses.

The overall student experience combines activities and interactions with technology, in class problem solving, and personal interaction. I plan to enhance the students experience by improving these physical, emotional, and social interactions. My learning experience from Business Calculus and Statistics for Business and Economics will provide me with additional academic rigor and allow me to improve my student's learning experience. To achieve higher success rates, students must be engaged in activities that are appropriate to their level of learning.

The results of this one-semester sabbatical project will improve my knowledge and experience as an instructor, increase the quality of the Oxnard College Statistics and Business Calculus courses, and increase the overall student experience and success

rate. Not only will the high-quality content math videos be useful for online and hybrid courses, but also for traditional in person courses too.

The overall goal is to improve the success and retention rates for Oxnard College Statistics and Business Calculus courses. To improve student's success, it is important to be up to date with new strategies and tools for teaching the algebra support courses. To improve retention rates, it is important to implement engaging and high-quality content learning videos for our online, hybrid, and in person courses.

Project Methodology

Fall 2022 Academic Study at CSUCI

Engage in academic study at a regionally accredited institution of higher education per Sabbatical Leave Article 8.6.C. I will enroll in two Math courses at CSU Channel Islands; Math 140 Calculus for Business Applications and Math 329 Applied Statistics for Business and Economics. See course descriptions below.

- **Math 140 Calculus for Business Applications**: (3 units) An integrated course in analytic geometry and calculus in the context of business and economics applications. Functions, limits, derivatives, integrals, and mathematical modeling are used in problem-solving in decision-making context.

- **Math 329 Applied Statistics for Business and Economics**: (3 units) Applications of modern statistical methods used in business analysis and economics, especially in experimental data evaluation and decision-making contexts. Topics include sampling, probability, various distributions, correlation and regression, statistical inferences, hypothesis testing, problem solving and the consequences to underlying economic systems. Includes a project in the community.

I will also compare textbooks and course content at CSU Northridge and California Lutheran University on their academic rigor for Business Calculus.

- Math 103: Mathematical Methods for Business (3 units) at CSU Northridge.
- Math 245: Applied Calculus at California (4 units) Lutheran University

To improve retention rates, it is important to implement engaging high quality content learning videos for our online, hybrid, and in person courses. The components are:

I. Find and evaluate existing videos located on popular websites like YouTube and Khan Academy. Each video will pass a video quality guidelines and video technical standards.

    A. Video Quality Guidelines

        i. Video output is to be well lit and should not appear dark on-screen creating difficulty in seeing the features of the subjects in the video.

        ii. All shots are to be clearly focused and well framed. Close-ups should focus attention, not distract the viewer.

        iii. Video output is to be stable, not shaky.

        iv. All titles or other text added to the video must be proofread for accuracy and proper grammar. Misspellings, typos, and poor usage are unacceptable and will require recreating the necessary section of the video.

        v. Any additional graphics or animations should be professional, appropriate, and necessary for the message of the video. Graphics and animations must be clean, clear, undistorted and fit on the screen.

        vi. All fade in/fade outs, effects, etc. should add to the message of the video and must be smooth, not abrupt or choppy.

        vii. All dead air should be edited out, so the video is seamless from beginning to end.

    B. Video Technical Standards

        i. Video Format: Quicktime (.mov) and MPEG (.mp4), Canvas studio, or Canvas compatible software.

        ii. Aspect Ratio: Native aspect ratio without letterboxing (example: 16:9)

        iii. Resolution: High-Definition video at either 1280x720, 1920x1080, or higher.

        iv. Audio Format: MP3

        v. Frames per second: Native frame rate

        vi. Aspect Ratio: The aspect ratio of the original source video should always be maintained when it's uploaded.

      vii.   Testing: it's important to test that audio and video quality are satisfactory.

     viii.   Original Video Source: The less a video is re-encoded prior to uploading, the better the video quality.

II.   Create videos for any uncovered topics in Business Calculus and/or Statistics. There will be some gaps in existing algebra topics since our algebra support courses are unique. Videos will be created using either Canvas Studio, Doceri, or other qualified software.

III.   Create a course shell in CANVAS that will house the high-quality content videos.

Work plan and schedule

Academic Study at CSUCI Fall 2022

Enroll in Math 140 Calculus for Business Applications and Math 329 Applied Statistics for Business and Economics course at California State University Channel Islands.

      i.   Attend a total of six hours lecture in the lab per week.

     ii.   Complete assigned homework and readings.

    iii.   Complete assigned projects.

I will also compare textbooks and course content at CSU Northridge and California Lutheran University on their academic rigor for Business Calculus.

- Math 103: Mathematical Methods for Business (3 units) at CSU Northridge.

  o Concepts and applications of algebra and calculus to business. Topics include functions, systems of equations, matrices, the derivative and business-related topics in calculus.

- Math 245: Applied Calculus at California (4 units) Lutheran University

  o This course examines methods of mathematics used in business and economics, with a focus on problem solving and applications. It includes the ideas of differential calculus, including applications to marginal analysis (cost, revenue, profit), the elasticity of demand, and optimization. Concepts of integration up through substitution are included. Optimization is further examined through systems of linear equations and matrices, linear programming, and a brief introduction to game theory. Required for Business Majors

Verify and/or create 1-2 videos per week. Upload videos to Canvas Shell per week. Topics will include:

   I.   Algebra Support Topics for Statistics and/or Business Calculus
       A. Decimals and Percent in statistical context word problems
               i.   Convert between percentages and decimals
               ii. Write ratio as a percentage
               iii. Compute a percentage from a table of values
       B. Summation Notation
       C. Linear Equations $y = mx + b$, including graphs and intercepts
       D. Translate a sentence into a one-step equation
       E. Graphical displays (e.g. histograms, line graphs, quadratic graphs, polynomial graphs)
       F. Counting and Probability (e.g combinations, permutations, factorial expressions, probability of an event)
       G. Factoring methods (e.g GCF, FOIL)
       H. Write Profit, Revenue, and Cost functions

   II. Business Calculus Topics
       A. Use linear systems of equations to find equilibrium point for supply and demand, cost and revenue, and profit functions.
       B. Use the limit process to examine and evaluate the behavior of a cost, revenue, and profit function in the long run.
       C. Use the first derivative rules and apply to Marginal Analysis.
       D. Use the first derivative rules and apply to Approximations Using Increments.
       E. Use the first derivative rules and apply to Optimization.
       F. Use the first derivative rules and apply to Elasticity of Demand.
       G. Use exponential functions and apply to Future and Present Value of Investment.
       H. Use techniques of integration and apply to Distribution of Wealth and Average Value

<u>Product of the sabbatical (a paper, a film, an exhibit, etc.)</u>

The product of this sabbatical will be:

(1) The successful completion of Math 140 Calculus for Business Applications and Math 329 Applied Statistics for Business and Economics course at California State University Channel Islands.

(2) A library in Canvas for our students and faculty that will house all high-quality mathematics videos on topics related to Statistics, Business, Economics, and Algebra support. These videos will be the most advantageous to our students.

How do you plan to share your sabbatical results at Oxnard College? Do you have plans for sharing your results more broadly?

I will integrate relevant information obtained from my Math 140 Calculus for Business Applications and Math 329 Applied Statistics for Business and Economics into the classes that I am assigned to teach: Statistics and Business Calculus. Students enrolled in my classes will be able to learn and appreciate real life applications.

I will share my relevant information with my colleagues at department meeting(s) and/or self-assigned flex days for use in their classes as well.

Currently, as the only instructor teaching Business Calculus, I will share my library of videos with my colleagues. These videos are great resources for any instructor to use if they are assigned to teach this class.

The algebra support topics will also be useful for any math instructors teaching any algebra related topics (e.g Math R5, R15, R102, R105, R106, R115, etc.).

Value of Project (here, given an overall statement of how this project will benefit you, personally and professionally, as well as how it will benefit others).

The sabbatical project will allow me to engage in professional growth and will give me additional tools to help students learn and succeed. Integrating real life applications into math courses will enhance student engagement and provide students a greater understanding of how and why math can be used. I will directly experience taking Statistics and Business Calculus which is a class that Oxnard College graduates are often required to complete. The library of videos will be a resource for any instructor to use if they are assigned to teach the corresponding classes. The algebra support topics will also be useful for any math instructors teaching any algebra related topics (e.g Math R5, R15, R102, R105, R106, R115, etc.).