

## MATH 461 Senior Project

### 1. Catalog Description

#### **MATH 461 Senior Project I (2)**

Selection and development of a mathematics project under faculty supervision. Minimum 60 hours total time. **MATH 461** Prerequisite: Senior Standing.

### 2. Required Background or Experience

Senior standing in the university.

### 3. Learning Objectives

- a. Ability to reduce a general problem to specific points of analysis.
- b. Ability to organize points of analysis into a logical sequence.
- c. Ability to apply competencies acquired in other courses to the successful completion of a specific project.
- d. Ability to obtain information necessary to the solution of a problem by library study, experimentation, and/or correspondence and personal contact with individuals who have had experience in the field.
- e. Ability to follow a work proposal without overlooking any major points or significant details.
- f. Ability to organize, illustrate, and write a clear, concise, and correct report of the investigation.
- g. Ability to work for a supervisor who desires quality performance with a minimum of supervision.

### 4. Text and References

- a. Previously completed senior projects in Kennedy Library on microfiche.
- b. Journals, books, and texts relevant to the topic.

### 5. Minimum Student Materials

Varies with each project.

### 6. Minimum University Facilities

Library and computer labs.

### 7. Content and Method

- a. The student must find a project advisor and work with the advisor to define a project. The project should be of such scope as to require 120 hours to complete.

A student may choose to work with an advisor outside of the Mathematics Department but must first obtain approval from the Math 461/462 course supervisor.

**Selection of a topic and a senior project advisor must be made before the last day to add courses for the quarter enrolled.**

- b. After selecting a project advisor, the student must enroll in the appropriate section of Math 461.
- c. The student should meet regularly with his/her advisor.
- d. By the end of the fifth week of Math 461, the student must turn in a Senior Project Completion Contract to the Senior Project Coordinator. The contract must be signed by the senior project faculty advisor and the student, and must include a project proposal (see Attachment A), schedule, and plan for completion. The advisor will assign a grade in Math 461 based on the completion of a significant portion of the senior project, as determined by the advisor. The grade of RP will no longer be used in MATH 461.
- e. After the Senior Project Completion Contract is approved, the student continues work on the project. A project draft as close to the completed form as possible (see Attachment B for details on manuscript form) should be submitted to the advisor for comments well before the end of the quarter of enrollment in Math 462. At least one week should be allotted for advisor perusal and one week for recommended changes and corrections.

The student is expected to complete his/her senior project by the end of Math 462. The use of an "I" grade is discouraged. However, if an "I" grade is assigned, a contract must be completed that outlines the terms and deadlines for completion. The "I" contract must be signed by the senior project faculty advisor and the student, and submitted to the Senior Project Coordinator. **Do not count on an advisor's availability during academic holidays, final examination periods, or summer break unless you have made specific arrangements with your advisor.**

- f. After complying with the advisor's recommendations, the student will submit the following items in a 9×12 envelope labeled *Senior Project* to the advisor:
  - i) The corrected final unbound report; and
  - ii) A completed Graduate Status Report (attached at the end of this document).
- g. The advisor:
  - i) Reads the final report and assigns a grade for both Math 461 and 462. The grade will either be entered on the standard grade roster or on a Grade Change Form, as appropriate.
  - ii) Signs the approval page.
  - iii) Forwards the complete package (including the Graduate Status Report) to the Mathematics Department Administrative Support Assistant.
  - iv) Specifies whether the project is meritorious (projects deemed meritorious will be submitted to the library).
- h. The department chair checks the correctness and completeness of the submitted package, signs the approval page, and records completion of the project. Projects are then returned directly to the advisor or, if meritorious, forwarded to Kennedy Library for processing.

(Attachment A)

*(Student's name is to appear here, typed)*

PROJECT PROPOSAL

Math 461, 462

I propose to develop a database that would store information regarding the California condors.

Last spring, the director of the Ventana Wilderness Society, Kelly Sorenson, visited Cal Poly to give a presentation about the problems associated with the restoration of the California condor. One of the main problems he discussed was that the data on these birds is stored in a very complicated manner. Each bird can be referred to in multiple ways. This makes it difficult to make inferences from the data. A simple, straightforward database would greatly facilitate in the derivation of statistics. From these statistics, one may make inferences. Thus, I intend to design a database that would sort through much of the ambiguity. Hopefully, my work will be put to good use by director Sorenson.

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Student

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Senior Project Advisor

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Mathematics Department Chair

Date: \_\_\_\_\_

(Attachment B)

## GENERAL MANUSCRIPT DETAILS

- A. The following is a suggested list of the various major headings and the order in which they might appear in your report. Individual projects are likely to vary as to the titles of these major headings.

### Table of Parts of the Senior Project

Title Page (see page 5)  
Approval Page (see page 6)  
Abstract  
Table of Contents (see page 7)  
List of Tables and/or Figures (see pages 8, 9)  
Prefatory Material  
Introduction  
Historical Review  
Theory  
Materials and Apparatus  
Method of Procedure  
Results  
Discussions  
Summary  
Appendix  
Bibliography

NOTE: Due to variation in content between Senior Projects, all the above parts may not be required for each project. However, the Mathematics Department does require both a title page and an approval page.

- B. Certain conventions regarding margins, numbering, and heading should be observed. Default settings on standard word processing programs for margins and page numbering are acceptable. Consult a standard style manual for information on these conventions. Label and/or number all illustrative materials (graphics, diagrams, etc.) and tables appropriately. Essential explanatory notes are placed below the illustrative materials. If a footnote is necessary, it is used according to standard footnote form, but it should not be separated from the figure or table by a dividing line.

(Sample Title Page)

(TITLE)

by

(Name)

Mathematics Department  
California Polytechnic State University  
San Luis Obispo  
2004

(Sample)

APPROVAL PAGE

TITLE: Daily Sunspot Spectral Analysis

AUTHOR: *(Student's name)*

DATE SUBMITTED: June 2004

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Senior Project Advisor

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Signature

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Mathematics Department Chair

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Signature

(Sample)

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(Sample)

LIST OF TABLES

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(Sample)

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### CAL POLY GRADUATE STATUS REPORT

Please take a few minutes to respond to the questions below for Cal Poly's annual Graduate Status Report. Know that your Graduate Status response will support the Cal Poly community in advising current students, showcasing collective alumni accomplishments, and articulating the value of Cal Poly's *Learn by Doing* curriculum to employer and graduate school representatives. We wish you continued success in all your professional and personal endeavors.

Name: \_\_\_\_\_ Cal Poly Username: \_\_\_\_\_  
First Last  
Major/Concentration: \_\_\_\_\_ Degree: Bachelor's  Credential  Master's   
Grad Date: \_\_\_\_\_ Personal Email: \_\_\_\_\_

Please check the most appropriate response:

**Add Job:**

Employer: \_\_\_\_\_  
Job Title: \_\_\_\_\_  
Industry (See Back For Options): \_\_\_\_\_  
Location (City, State): \_\_\_\_\_  
When: Offer Received Date: \_\_\_\_\_ Offer Accepted Date: \_\_\_\_\_ Start Date: \_\_\_\_\_  
Starting Compensation: \_\_\_\_\_ Base Salary: \_\_\_\_\_  
Expected Bonus: \_\_\_\_\_ Other Guaranteed Compensation: \_\_\_\_\_  
Signing Bonus: \_\_\_\_\_ Relocation Reimbursement: \_\_\_\_\_

**Job Source:** (See Back For Options) \_\_\_\_\_

Is this a full-time position: Yes  No  To what extent is your employment related to your major?:  
Directly related  Somewhat related  Not related

Did this job come as a result of an internship you had with this employer: Yes  No

**List all Internships:**

Internship Title	Company/Organization	Academic Credit	Compensation Type	Salary/Stipend
_____	_____	Yes or No	_____	_____
_____	_____	Yes or No	_____	_____
_____	_____	Yes or No	_____	_____

Please share any advice you have for Cal Poly students in your field: \_\_\_\_\_

**Add Education:**

Degree Level: 2nd Bachelor's  Associate  Master's  Doctorate  Certificate   
Degree Earning: \_\_\_\_\_ Start Date: \_\_\_\_\_  
University Name: \_\_\_\_\_  
Location (City, State): \_\_\_\_\_  
Graduate Assistant: \_\_\_\_\_ Stipend: \_\_\_\_\_

**Still Seeking Employment/Education (See Back for Options)** \_\_\_\_\_

**Not Seeking Employment/Education**

**Add Other Outcome or Plan (See Back for Options)** \_\_\_\_\_

Outcome Position: \_\_\_\_\_  
Organization/Program: \_\_\_\_\_  
Location (City, State): \_\_\_\_\_

The information collected is confidential, if you do not want your response to this survey shared with other University offices, please check this box.

## UNLIMITED POSSIBILITIES

**Industry** (Insert Abbreviation):

- » **Accounting** (ACT)
- » **Advertising** (ADV): General, Marketing, Public Relations
- » **Aerospace/Aviation** (AERO)
- » **Agribusiness** (AGB)
- » **Automotive** (AUTO)
- » **Construction** (CONST)
- » **Consulting** (CONSU): General, Biotech., Gas/Oil, Healthcare, Nonprofit, Management, Tech., Other)
- » **Consumer Products** (CP): General, Apparel, Food/Bev., Electronics, Household, Luxury, Tobacco/Alcohol, Other
- » **Economic Development/Microfinance** (ECON)
- » **Education** (EDU)
- » **Energy/Utilities** (ENER): General, Alternative Energy, Energy Trading, Oil/Gas, Utility Services, Other
- » **Entertainment** (ENTER): General, Recreation, Sports Mgmt.
- » **Environmental Services & Sustainability** (ENVE)
- » **Finance** (FIN): General, Commercial Banking, Diversified Financial Services, Hedge Funds, Insurance, Investment Banking, Investment Mgmt., Private Equity, Public Finance, Research & Ratings, Tax, Treasury, Venture Capital, Other
- » **Government** (GOV): General, Local/State/Federal, Military
- » **Healthcare** (HC): General, Biotechnology, Medical Devices, Providers & Services, Other
- » **Hospitality/Tourism** (HOSP)
- » **Human Resources/Recruitment** (HR)
- » **International Trade – Import/Export** (IT)
- » **Law/Legal Services** (LAW)
- » **Manufacturing** (MFG): General, Chemicals, Heavy Equipment, Packaging, Plastics/Rubber, Other
- » **Media** (MEDIA): General, Publishing, Radio/TV/Film
- » **Natural Resources** (NR): General, Forest, Metals/Mining
- » **Nonprofits & Social Enterprises** (NONP)
- » **Pharmaceutical** (PHAR): General, Distribution/Wholesale, Manufacturers, Other
- » **Real Estate** (RE): General, Commercial, Residential, Services, Other
- » **Retail** (RET)
- » **Technology** (TECH): General, Hardware/Networking, Internet Services, Multimedia Services, Software, Other
- » **Telecom** (TELE): General, Manufacturing, Services, Other
- » **Transportation/Logistics** (TRANS)
- » **Other** (OTHER)

**Job Source:**

- » Career or Job Fair
- » MustangJOBS job posting
- » Employer information/networking meeting
- » Scheduled interviews on campus
- » Resume books, resume referrals, web resumes
- » Off-campus activities supported by Cal Poly Career Services
- » School-facilitated Internships
- » Graduate-facilitated internships
- » Faculty referrals
- » Alumni referrals
- » Previous employer
- » Family, friends outside school
- » Consortia events
- » Other school-facilitated activity
- » Internet
- » Video and telephone interviews
- » Third-party sources (e.g., executive recruiters)
- » Direct mail campaign
- » Newspaper, magazine, and other advertisements
- » Other

**Seeking Employment Status:**

- » I have yet to make any attempts to look for a job
- » I have applied for one or more opportunities but have not received an invitation to interview
- » I have interviewed for one or more opportunities but have not received an offer of employment
- » I have received one or more offers of employment and I am currently deciding
- » I have received one or more offers of employment but have declined

**Other Outcome:**

- » Postponing Job Search
- » Fellowship
- » Service Organization
- » Volunteering
- » Military Service
- » Exam preparation
- » Artistic pursuits
- » Caring for or starting a home or family
- » Taking time off
- » Studying abroad
- » Summer classes
- » Research
- » Other intentions

[calpoly.12twenty.com/SignUp/Student](http://calpoly.12twenty.com/SignUp/Student)