FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: CTS 2456C

COURSE TITLE: Introduction to SAS Programming

PREREQUISITE(S): None

COREQUISITE(S): None

CONDITIONS: None

CREDIT HOURS: 3

CONTACT HOURS/WEEK: 4

CONTACT HOUR BREAKDOWN:

Lecture/Discussion:

Laboratory:

Other: Lecture/Lab Combined 4

FACULTY WORKLOAD POINTS: 4.0

STANDARDIZED CLASS SIZE

ALLOCATION: 24

CATALOG COURSE DESCRIPTION:

This course will provide students with the knowledge and skills required to access, manage, manipulate and analyze data using the SAS language. Students will learn basic programming constructs, such as assignment statements, ~~and~~ if/then/else statements, and looping. SAS programming topics include: importing messy raw data, reading and combining SAS data assets efficiently using the SAS DATA step, using the RETAIN and OUTPUT statements, working with date and time values, manipulating character values, generating data with DO loops, and enhancing output of reports with ODS (Output Delivery System). This course also provides a survey of major statistical analysis procedures, creating reports, and using the SQL procedure to query and combine data tables. Students will be prepared for taking the SAS Version 9 Base Programming Certification Exam.

SUGGESTED TEXT(S): *The Little SAS Book: A Primer*, Susan J. Slaughter and Lora D. Delwiche, SAS Institute, latest edition.

*SAS Certification Prep Guide: Base Programming for SAS 9,* SAS Institute, latest edition (Optional).

IMPLEMENTATION DATE: Fall Term 2018 (2188) – Proposal 2018-32

REVIEW OR MODIFICATION DATE: Spring Term 2020 (2202) – Proposal 2019-42

Fall Term 2020 (2208) - Proposal 2020-07

Fall Term 2021 (2218) – Proposal 2021-09

Fall Term 2022 (2228) – Proposal 2021-42

COURSE TOPICS CONTACT HOURS

PER TOPIC

1. Concepts of SAS Programming 3

A. SAS File Types

B. Creating and Processing SAS Programs

1. Accessing Data 6

A SAS Data Sets

B. SAS Libraries

1. Reading Data 6

A. SAS Data Sets

B. Spreadsheet Data

C. Raw Data

1. Working with Data 11

A. Using the DATA Step

B. IF-THEN Statements

C. DO, DO WHILE, and DO UNTIL Statements

D. Sorting, Printing, and Summarizing Data

E. Combining Data Sets

1. Creating Reports 3
2. Formatting Data Values 3
3. SAS Functions and Procedures 6
4. Visualizing Data with SAS 4

IX. RESTful APIs and SAS 3

1. Lab Exercises and Activities 15

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| **Florida State College at Jacksonville** | | | | | | | | | | | | | **Course Learning Outcomes and Assessment** | | | | | | | | | | | |
| **SECTION 1** | | | | | | | | | | | | | | | | | | | | | | | | |
| Course Prefix and Number: | | | | | CTS 2456C | | | | | | | | | | | Semester Credit Hours (Credit): | | | | | | | | 3 |
| Contact Hours (Workforce): | | | | | | | |  |
| Course Title: | | | | | Introduction to SAS Programming | | | | | | | | | | | | | | | | | | | |
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| **SECTION 2a *(To be completed for General Education courses only.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
| ***TYPE OF COURSE (Place an “X” in the box next to those that are applicable.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
|  | General Education Core (If selected, core discipline area will be identified in Section 4.) | | | | | | | | | | | | | | | | | | | | | | | |
|  | General Education (If selected, you must also complete Section 4, Section 5, and Section 8) | | | | | | | | | | | | | | | | | | | | | | | |
| **SECTION 2b** | | | | | | | | | | | | | | | | | | | | | | | | |
| ***TYPE OF COURSE (Place an “X” in the box next to those that are applicable.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
| X | A.A. Elective | | | | | | | X | | A.S. Required Course | | | | | | | | | | X | A.S. Professional Elective | | | |
|  | A.A.S. Required Course | | | | | | |  | | A.A.S. Professional Elective | | | | | | | | | | X | Technical Certificate | | | |
|  | PSAV/Clock Hour/Workforce | | | | | | |  | | Development Education | | | | | | | | | |  | Apprenticeship | | | |
|  | Upper Division/Bachelors | | | | | | |  | | Other: | | If selected, use this space to title “other” option. | | | | | | | | | | | | |
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| **SECTION 3** | | | | | | | | | | | | | | | | | | | | | | | | |
| ***INTELLECTUAL COMPETENCIES (Place an “X” in the box next to those that are applicable.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | Reading |  | Speaking | | |  | | Critical Analysis | | | | | |  | | | Qualitative Skills | | | |  | Scientific Method of Inquiry | |
|  | | Writing |  | Listening | | |  | | Information Literacy | | | | | |  | | | Ethical Judgement | | | |  | Working Collaboratively | |
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| **SECTION 4 *(To be completed for General Education courses only.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
| ***GENERAL EDUCATION DISCIPLINE AREA (Place an “X” in the box next to those that are applicable.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
|  | Communications | | | | |  | | | | Humanities | | | |  | | | Mathematics | | | | | | | |
|  | Social and Behavioral Sciences | | | | | | | | | | | | |  | | | Natural Sciences | | | | | | | |
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| **SECTION 5 *(To be completed for General Education courses only.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
| ***GENERAL EDUCATION LEARNING OUTCOME AREA (Place an “X” in the box next to those that are applicable.)*** | | | | | | | | | | | | | | | | | | | | | | | | |
|  | Communication | | | | |  | | | | Critical Thinking | | | |  | | | Information Literacy | | | | | | | |
|  | Scientific and Quantitative Reasoning | | | | | | | | | | | | |  | | | Global Sociocultural Responsibility | | | | | | | |
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| **SECTION 6** | | | | | | | | | | | | | | | | | | | | | | | | |
| ***LEARNING OUTCOMES*** | | | | | | | | | | | ***TYPE OF OUTCOME***  ***(General Education, Course or Program)*** | | | | | | | | ***METHOD OF ASSESSMENT*** | | | | | |
| Create and process SAS programs | | | | | | | | | | | Course | | | | | | | | Programming Lab and/or Homework Assignments / Exams | | | | | |
| Access data in SAS data sets and SAS libraries | | | | | | | | | | | Course | | | | | | | | Programming Lab and/or Homework Assignments | | | | | |
| Create Reports | | | | | | | | | | | Course | | | | | | | | Programming Lab and/or Homework Assignments | | | | | |
| Read data from SAS data sets, spreadsheet data, and raw data | | | | | | | | | | | Course | | | | | | | | Programming Lab and/or Homework Assignments / Exams | | | | | |
| Correctly use SAS functions and procedures and format data values | | | | | | | | | | | Course | | | | | | | | Programming Lab and/or Homework Assignments / Exams | | | | | |
| Combine data sets | | | | | | | | | | | Course | | | | | | | | Programming Lab and/or Homework Assignments / Exams | | | | | |
| Use conditional logic in SAS programs | | | | | | | | | | | Course | | | | | | | | Programming Lab and/or Homework Assignments / Exams | | | | | |

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| **SECTION 6 (Continued)** | | |
| ***LEARNING OUTCOMES*** | ***TYPE OF OUTCOME***  ***(General Education, Course or Program)*** | ***METHOD OF ASSESSMENT*** |
| Use SAS to create charts, graphs, and visualizations of data | Course | Programming Lab and/or Homework Assignments |
| Collect and transform financial data from the web using a RESTful API with SAS | Course | Programming Lab and/or Homework Assignments / Exams |

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| **SECTION 7** | | | |
| Faculty name(s): | Pamela Brauda | Date: | 10/31/2021 |