

# PROFESSIONAL STUDIES INTEGRATED INFORMATION, SCIENCE, AND TECHNOLOGY (PSIS)

## Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that also may be taken for graduate credit with permission and additional work assigned
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

### **PSIS 2101. Writing and Communication in the IT Field I. 4 Credits.**

Fundamentals of reading and writing with a clear sense of purpose and audience; how academic writing represents a formal engagement with larger scholarly debates; the writing process, including prewriting, drafting, and revision as well as basic research methods; making clear oral presentations.

### **PSIS 2102. Writing and Communication in the IT Field II. 4 Credits.**

Continuation of PSIS 2101. The research and composition process; subject-specific citation style and research methodologies; and sustaining a cohesive argument over the course of an extended scholarly paper.

### **PSIS 2103. Statistical Sciences and Data Analysis I. 4 Credits.**

Basic methods of descriptive statistics. Topics include displaying and describing data, the normal distribution, measure of center, simple linear regression, and probability theory.

### **PSIS 2104. Statistical Sciences and Data Analysis II. 4 Credits.**

Advanced topics in statistics, including confidence intervals, hypothesis testing, inference, correlation, and multiple regression.

### **PSIS 2105. Programming and Computing Foundations I. 4 Credits.**

Introduction to computer programming using Python. Elementary data types, control flow, assignments, functions, loops, conditionals, and methods.

### **PSIS 2106. Programming and Computing Foundations II. 4 Credits.**

Advanced topics in computing using Python; object-oriented programming, class construction, working with APIs, text files, and databases.

### **PSIS 3122. Ethics in Science and Technology. 4 Credits.**

Overview of contemporary ethical debates in the realm of science and information technology with a philosophically-informed logical framework for engaging with these debates.

### **PSIS 3123. Legislative Affairs and Governmental Procedures. 4 Credits.**

### **PSIS 4131. Molecular Biology for Biotechnology. 4 Credits.**

### **PSIS 4132. Phys Principles of Biotech. 4 Credits.**

### **PSIS 4133. Bioinformatics. 4 Credits.**

### **PSIS 4134. Biophysics in Life Sciences. 4 Credits.**

### **PSIS 4135. Computational Modeling. 4 Credits.**

### **PSIS 4136. Introduction to Biomedical Instrumentation. 4 Credits.**

### **PSIS 4137. Alternative Energy Sources. 4 Credits.**

### **PSIS 4138. Introduction to Health Information Technology. 4 Credits.**

Current and emerging health care information technologies, the policies involved in the delivery of health care and health IT, and the people and the processes that support the delivery of health care. Restricted to students in the BPS in integrated information science and technology program.

### **PSIS 4141. Computer and Telecommunication Networks. 4 Credits.**

### **PSIS 4142. Relational Databases and Their Design. 4 Credits.**

### **PSIS 4143. Systems Integration. 4 Credits.**

### **PSIS 4144. Information and Network Security. 4 Credits.**

### **PSIS 4145. Software Systems Development Processes. 4 Credits.**

### **PSIS 4151. Entrepreneurship and Communication Technology. 4 Credits.**

### **PSIS 4152. Entrepreneurship and Technology Venture Creation. 4 Credits.**

### **PSIS 4160. Introduction to Data Science. 4 Credits.**

Techniques used to understand, process, represent, and interpret large sets of data; fundamental concepts and abstractions used in data analysis; practical techniques employed by data scientists on a daily basis. Restricted to program majors. Prerequisites: PSIS 2103 and PSIS 2105.

**PSIS 4161. Data Visualization. 4 Credits.**

Data visualization fundamentals; theoretical and practical concepts related to creating visually appealing graphics using data; current and emerging software and web development tools. Restricted to students in the BPS in IIST program. Prerequisite: PSIS 2105.

**PSIS 4162. Data Mining and Web Analytics. 4 Credits.**

Data mining techniques for structured and unstructured data; pattern discovery, text mining and natural language processing, cluster and sentiment analysis, and web scarping and analytics. Restricted to Major only. Prerequisites: PSIS 2105 and PSIS 2106.

**PSIS 4190. Capstone Project and Senior Thesis. 4 Credits.**

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**PSIS 4191. Capstone Project and Senior Thesis I. 2 Credits.**

The capstone project allows either the conduct of significant independent research or the design and implementation of a real-world project. Either choice is a means for students to use the knowledge and skills they have acquired throughout the program. For most students, the capstone project can showcase their skills via a comprehensive written report or a portfolio that can be presented to future employers.

**PSIS 4192. Capstone Project and Senior Thesis II. 2 Credits.**

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**PSIS 4195. Undergraduate Research. 1-4 Credits.**

**PSIS 4199. Special Topics. 2-4 Credits.**

**PSIS 5099. Variable Topics. 1-99 Credits.**