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DETAILED MAJOR INFORMATION

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Generate College Major Level Information For:

COUNTRY:	COUNTRY: USA (1) ▾	**STATE:**	STATE ▾
CATEGORY:	CATEGORY ▾	**MAJOR:**	TYPE: MAJOR (1) ▾

COLLEGE: COLLEGE: University of Pennsylvania (UPenn) (1) ▾

DEPARTMENT: DEPT NAME: School of Engineering and Applied Science (1) ▾

PROGRAM NAME: PROGRAM NAME: Computer Science (1) ▾

COURSE SEARCH: SEARCH FOR A COURSE CONTAINING ▾

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by GrowME

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CORE COURSE OFFERED

- CIS 1100 Introduction to Computer Programming: An introductory course focusing on fundamental programming concepts and problem-solving techniques.

- CIS 1200 Programming Languages and Techniques I: Covers programming paradigms, data structures, and algorithmic techniques.

- CIS 1210 Programming Languages and Techniques II: Continues from CIS 1200, delving deeper into advanced programming concepts and methodologies.

- CIS 1600 Mathematical Foundations of Computer Science: Introduces mathematical concepts essential for computer science, including logic, proofs, and combinatorics.

- CIS 2400 Introduction to Computer Systems: Provides an overview of computer architecture, operating systems, and low-level programming.

- CIS 2610 Discrete Probability, Stochastic Processes, and Statistical Inference: Focuses on probability theory and its applications in computer science.

- CIS 2620 Automata, Computability, and Complexity: Explores theoretical foundations of computation, including automata theory and computational

ELECTIVES OFFERED

- CIS 3410 Data Structures and Algorithms: Advanced study of data structures and algorithmic techniques.

- CIS 3500 Software Design/Engineering: Focuses on software engineering principles and practices.

- CIS 3710 Computer Networks: Covers principles and protocols of computer networks.

- CIS 3800 Computer Operating Systems: An in-depth study of operating system design and implementation.

- CIS 4120/5120 Introduction to Human-Computer Interaction: Explores the design and evaluation of user interfaces.

- CIS 4410/5410 Embedded Software for Life-Critical Applications: Focuses on software development for embedded systems in critical applications.

- CIS 4480/5480 Operating Systems Design and Implementation: Advanced study of operating system design and implementation.

FACULTY INFORMATION

- Zachary G. Ives: Adani President's Distinguished Professor and Chair of Computer and Information Science. Research interests include data systems, large-scale data processing, and data integration.

- Boon Thau Loo: RCA Professor in Computer and Information Science. Leads the Distributed Systems Laboratory and focuses on distributed systems and declarative networking.

- Aaron Roth: Henry Salvatori Professor of Computer and Cognitive Science. Researches algorithm design, algorithmic fairness, differential privacy, and algorithmic game theory.

- Insup Lee: Cecilia Fitler Moore Professor in Computer and Information Science. Director of the PRECISE Center, specializing in cyber-physical systems, real-time computing, and formal methods.

DEGREE SPECIALIZATION

Degree Types:

- Bachelor of Science in Engineering (BSE): A traditional engineering degree preparing students for careers in professional engineering, computer science, or digital media design.

- Bachelor of Arts and Sciences (BAS): Designed for students who do not plan to work as professional engineers and want a customized education combining liberal arts and technology.

- Bachelor of Arts (BA): Available as a second major for students in the College of Arts and Sciences.

Special Tracks:

- Artificial Intelligence: Focuses on machine learning, natural language processing, and related areas.

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RESEARCH FOCUS AREAS	Data systems and integration: led by faculty like Zachary G. Ives, focusing on Large-Scale data processing and integration. ▪ distributed systems and networking: Research in declarative networking and distributed systems, led by Boon Thau Loo. ▪ Algorithmic fairness and privacy: studies on Algorithmic fairness and differential privacy, with contributions from Aaron Roth. ▪ Cyber-Physical systems and real-time computing: Research on Cyber-Physical systems and real-time computing, Directed by Insup Lee. ▪ machine learning and Artificial intelligence: Research in machine learning and AI, with contributions from Michael Kearns.

PAPERS PUBLISHED	Efficient query processing for data integration by Zachary G. Ives. this work Addresses challenges in data integration and query processing. ▪ declarative networking by Boon Thau Loo. focuses on declarative approaches to networking. ▪ the ethical algorithm: the science of Socially Aware algorithm design by Michael Kearns and Aaron Roth. Discusses the intersection of ethics and algorithm design. ▪ Constrained Conditional Models by Dan Roth. Explores Models for structured Prediction in machine learning. ▪ declarative networking by Boon Thau Loo. presents A declarative Approach to networking.

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ALUMNI CLUBS	Penn computer science Alumni network: an active network connecting Alumni working in various fields of computer Science. ▪ Penn Engineering Alumni Society: Supports Alumni from the School of Engineering and Applied science, including computer science graduates.
HIGHLIGHTS	The University of Pennsylvania is renowned for its strong computer science program, offering a comprehensive curriculum with opportunities for specialization in areas such as artificial intelligence, data science, and systems. The department boasts a distinguished faculty with expertise in diverse research areas, providing students with a rich academic environment. Additionally, UPenn's active alumni network offers valuable connections and career opportunities for graduates.
PROGRAM URL	https://catalog.upenn.edu/undergraduate/programs/computer-science-bse/