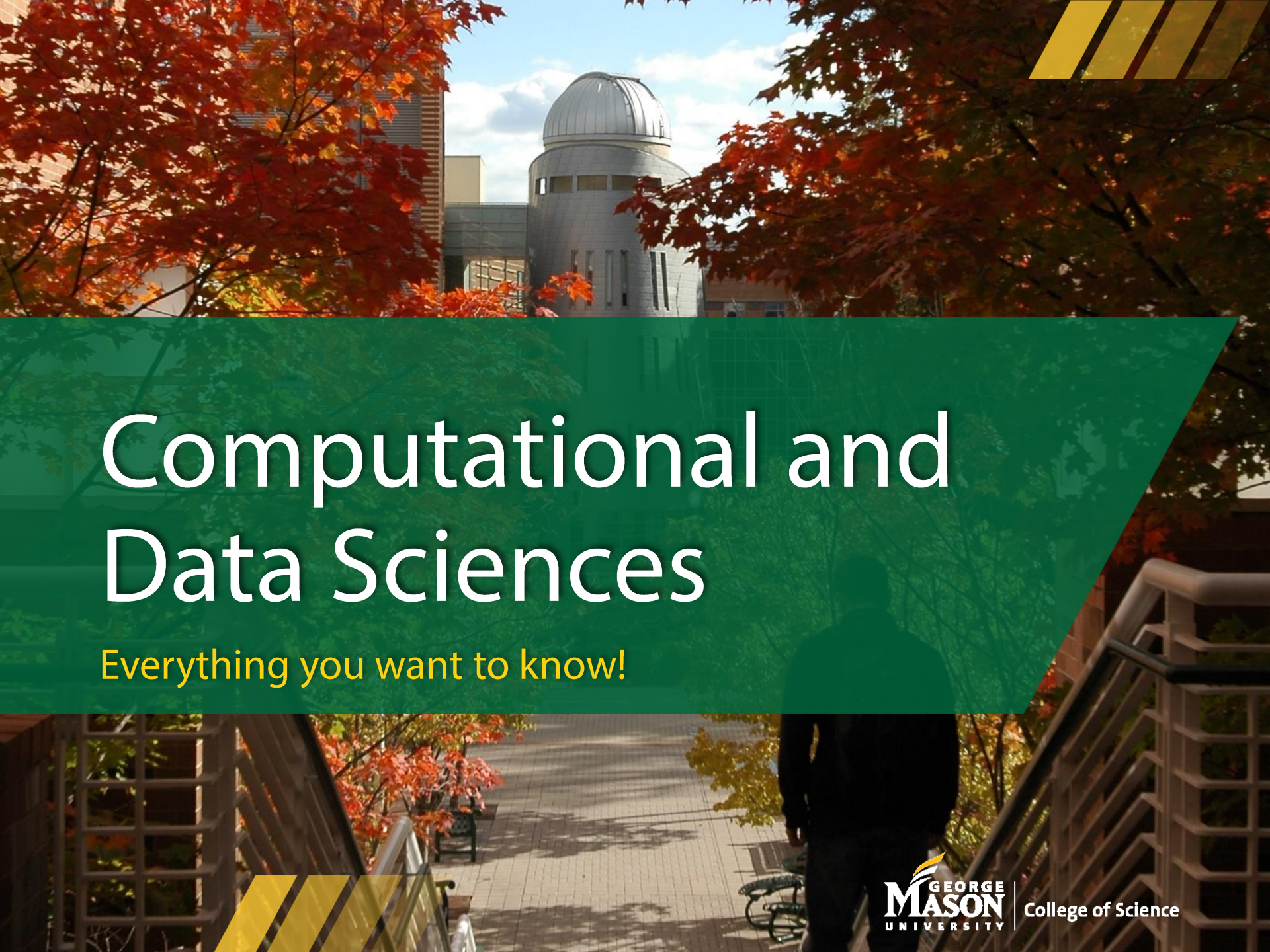

Computational and Data Sciences

Everything you want to know!

GEORGE MASON UNIVERSITY | College of Science

Why CDS?

- Academic approach is highly interdisciplinary and will lead to comprehension, interpretation and prediction of phenomena.

- Provide students skills to be competitive in neighboring federal labs, scientific institutions, and high technology firms.

- Gain technical skill set and knowledge to rigorously investigate social and physical phenomena
  - Develop and apply computational techniques for modeling and simulation
  - Develop and apply techniques for mining, managing, and analyzing large data sets.

UG Degree Breakdown

A. CDS Core Required Courses - 16 cr.

CDS 130 : Computing for Scientists

CDS 151: Data Ethics in an Information Society

CDS 230: Modeling and Simulation I

CDS 301: Scientific Information and Data Visualization

CDS 302: Scientific Data and Databases

CDS 303: Scientific Data Mining

B. CDS Required Extended Core – 24 cr.

CDS 101: Introduction to Computational and Data Sciences

CDS 201: Introduction to Computational Social Science

CDS 205: Introduction to Agent-based Modeling and Simulation

CDS 251: Introduction to Scientific Programming

CDS 290: Topics in Computational and Data Sciences

CDS 292: Introduction to Social Network Analysis

CDS 403: Machine Learning Applications in Science

CDS 411: Modeling and Simulation II

CDS 421: Computational Data Science

CDS 461: Molecular Dynamics and Monte Carlo Simulations

CDS 468: Image Operators and Processing

CDS 486: Topics in Computational and Data Sciences

CSI 500: Computational Science Tools

CSI 501: Introduction to Scientific Programming

UG Degree Breakdown

C. Mathematics - choose at least 10 credits from the following courses:

MATH 113: Analytic Geometry and Calculus I

MATH 114: Analytic Geometry and Calculus II

MATH 125: Discrete Mathematics I

MATH 203: Linear Algebra

MATH 446: Numerical Analysis I

- **D. Statistics - choose 6 credits from the following courses:**

STAT 250: Introductory Statistics I

STAT 350: Introductory Statisitcs II

STAT 344: Prob. and Stat. for Engineers and Scientists I

STAT 346: Probability for Engineers

E. Science and Engineering - choose 6 additional credits of science or engineering courses:

CDS Minor Breakdown

Minor Requirements:

- CDS 101 or CDS 130
- 9 cr. In any CDS or CSI course
- 3 cr. In any 300-400 level COS or CEC course

Accelerated Masters

Overall GPA of 3.0

Required Courses:

- CDS 205 or CDS 251
- CDS 230
- CDS 301
- CDS 411

One of the following:

- CDS 461
- CDS 490
- CSI 500

Career Paths

- Data Architect
  - Avg. Salary: $128,000 per year
- Data Engineer
  - Avg. Salary: $115,000 per year
- Machine Learning Engineer
  - Avg. Salary: $112,000 per year
- Data Scientist
  - Avg. Salary: $102,000 per year
- Business Intelligence Analyst
  - Avg. Salary: $91,371 per year
- Database Administrator
  - Avg. Salary: $89,900 per year
- Computer Systems Analyst
  - Avg. Salary: $82,000 per year
- Statistical Analyst
  - Avg. Salary: $81,500 per year
- Data Analyst
  - Avg. Salary: $65,000 per year
- Data Journalist
  - Avg. Salary: $48,000 per year

Source: Indeed Careers

Research Opportunities

"CDS researchers conclude that Mars colony could survive with fewer than two dozen people"

"CDS professor first at Mason to receive Young Simulation Scientist Award"

"Mason Students Build Data Science Tools to Tackle Air and Plastic Pollution"

- Computational Economics
- Cognitive Modeling
- Image Analysis and Multi-Domain Data Mining
- Earth Data
- Data Privacy, Urban Mobility Networks
- Modeling Simulation, Data-driven methods and Cybersecurity
- Climate Science and Environmental Science and Policy

Center for Social Complexity

The Center for Social Complexity at George Mason University is a specialized venue for pursuing interdisciplinary advanced research, discoveries, and inventions that support exploration and analysis of human social phenomena. It was created in 2002 under the Provost's Initiative in Computational Social Science and Social Complexity.

The Center subscribes to the philosophy of exploiting synergistic interactions between purely theoretical and applied policy research. Pure research and problem-oriented research can often profit from each other. The benefits of the pure-applied synergy have been amply demonstrated in the history of the social sciences (e.g., learning, human factors, organizations, governance, conflict resolution, peacekeeping), as well as in the life sciences and the physical sciences.

socialcomplexity.gmu.edu

STARS

Application Requirements:

- Current Minimum GPA of 3.5 (cumulative to date)
- No honor code infractions
- Complete one of the following courses with grade of A or above
  - CDS 130
  - CDS 101
  - CDS 102
  - CDS 201
  - CDS 230
  - CDS 251
  - CDS 292
- An affinity for fellow students!

cds.gmu.edu

Thank you!

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