TO: The Engineering Faculty
FROM: The Davidson School of Chemical Engineering
RE: New Optional Concentration – Data Science

The Faculty of the Davidson School of Chemical Engineering has approved the following additional optional concentration to complement the Bachelor of Science Degree in Chemical Engineering. This action is now submitted to the Engineering Faculty with a recommendation for approval.

Proposed Concentration Requirements:

Data Science (9 credits)

3 credits must be from CHE courses
6 credits must be 40000 level or higher

Select one of the following pre-requisite courses:

_____	(3)	CS 15900 Programming Applications for Engineers (*ENGR 13100*)
	(4)	CS 17700 Programming with Multimedia Objects
	(4)	CS 18000 Problem Solving and Object-Oriented Programming *(MA 16500)*

*Pre-requisite course do not apply to the 9 credits required for concentration

Select 9 credits from the following courses:

_____	(3)	AAE 55000 Multidisciplinary Design Optimization *(Junior or Senior Classification)*
_____	(3)	BIOL 47800 Intro to Bioinformatics *(BIOL 23000 & CS 18000/CS 17700/ CS 15900)*
_____	(3)	CGT 27000 Intro to Data Visualization
_____	(3)	CHE 41100 CHE Undergraduate Research
_____	(3)	CHE 55500 Computer Integrated Process Operations *(Senior Classification)*
_____	(3)	CHE 59700 Data Science in ChE *(CHE 32000)*
_____	(3)	CS 44800 Intro to Relational Database Systems *(CS 25100)*
_____	(3)	CS 47100 Intro to Artificial Intelligence *(CS 25100)*
_____	(3)	ECE 59500 Machine Learning OR IE 49000 Statistical Learning
_____	(1)	ILS 29500 Intro to Data Management
_____	(1)	PHIL 29300 Ethics of Data Science
_____	(3)	STAT 41600 Probability *(MA 26100)*

Reason:
The optional concentration in Data Science provides interested undergraduate students a way to enhance their degree by combining elements of computer programming, statistics, business and chemical engineering knowledge without impeding on the already rigorous undergraduate curriculum. Interested students will select focused courses (listed above) to fulfill their Technical Engineering Selective (3cr), Engineering Selective(s)(3-6 cr) and Chemical Engineering Selective (3cr) requirements for their BSCHE. This optional concentration is very attractive to our undergraduate population and highly recommended by our Industrial Advisory Committee, the growing industrial interest in data science, and in their growing needs of hiring chemical engineers that have more than just a brief exposure to data science and computer programming.

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Sangtae Kim
Jay and Cynthia Ihlenfeld Head of Chemical Engineering