## Master of Science in Industrial and Human Factors Engineering (IHE)

Department of Biomedical, Industrial & Human Factors Engineering, Wright State University

## Focus Areas

**Decision Analytics:** Provides the student with a background in both theory and application of optimizationbased and dynamic systems modeling. Emphasis is placed on mathematical techniques, computer modeling, and experimental methods as they relate to the design, development and analysis of complex systems such as healthcare, transportation, airlines, and retail.

Faculty: Dr. Frank Ciarallo, Dr. Mary Fendley, Dr. Jennie Gallimore, Dr. Subhashini Ganapathy, Dr. Pratik Parikh, Dr. Xinhui Zhang

**Logistics and Supply Chain:** Provides the student with a background in both theory and application of systemsbased modeling, manufacturing design, and continuous improvement. Emphasis is placed on inventory theory, forecasting, warehousing, and network design.

Faculty: Dr. Frank Ciarallo, Dr. Pratik Parikh, Dr. Xinhui Zhang

**Human Factors and Ergonomics:** Provides the student with a background in product usability, computer interface design, simulations and virtual environments, systems modeling, information retrieval, and human performance. Emphasis is placed on human-computer interaction, cognitive modeling and experimental methods as they relate to the design, development and analysis of systems such as petrochemical industries, military domain, and healthcare.

Faculty: Dr. Caroline Cao, Dr. Mary Fendley, Dr. Jennie Gallimore, Dr. Subhashini Ganapathy

<u>Neuroengineering</u>: Provides the student with a background in principles, computational methods, and technologies in this area. Emphasis is placed on using engineering techniques to understand, design, and analyze the neural-system interface.

Faculty: Dr. Caroline Cao, Dr. Mary Fendley, Dr. Jennie Gallimore, Dr. Subhashini Ganapathy

## **Degree Requirements**

• 30 semester credit hours (thesis optional) • 18 credit hours of IHE courses (6000- or 7000-level) • minimum of 12 credit hours of 7000+-level BIE Department courses • minimum of 6 credit hours of approved courses with math/statistics content • BME/IHE 6010 Ethics in Engineering Research & Practice (1 cr) • maximum of 4 credit hours of independent study/non-thesis research • maximum of 8 credit hours of thesis research • an approved Program of Study before 9 credit hours are earned. Additionally, full-time or part-time study, evening and distance education classes are available. Graduate teaching and research assistantships are awarded on a competitive basis for qualified students. *The MS in IHE degree program can be completed entirely online (for eligible students).* 

**Prerequisite coursework:** Students should expect to be prepared for their program with knowledge of topics such as calculus, calculus-based physics, statistics, computer programming, statics, dynamics, psychology, human factors engineering and/or core engineering courses, depending on the student's chosen degree and focus area.

				IHE Focus Areas					
			Fall Courses						
				Decision	Logistics/ Supply	Human Factors	Neuro-	Approved	Distance
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	Course	Cr	Title			•	•		D
	BME 6310	3		-		•	•		D
	BME 6350	3	Computational Neuroergonomics and Healthcare Applications			٠	٠		D
1	BME 6410	3	Biothermodynamics (not offered F16)				•		
16	BME 6440	4	Biomaterials				•		
20	BIVIE 6550 BME 6850	4	Bioinstrumentation	•	•	•	•		D
	BME 7110	3	Biomedical Signals	-	-		•	M	U
Š	BME 7210	3	Orthopaedic & Prosthetic Engineering			٠	٠		
a	BME 7370	3	Medical Devices (not offered 2016-17)			•	•		
G	BME 7371	3	Failure Analysis of Medical Devices			•	_		2
Э	IHE 6010	1	Ethics in Engineering Research & Practice	•	•	•	•		D
at	IHE 6310	3	Ergonomics			•	•		D
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. <u>⊆</u> .	IHE 6400	3	Engineering Economy		•	٠			D
e	IHE 6711	4	Optimization Methods	•	•				D
Ĵ	IHE 6820	3	Supply Chain Analysis & Design	•	•	•			D
O O	IHE 6980	4	Fundamentals of Probability & Statistics	•	•	•	•	M	D
ŝ	IHE 7010	3	Understanding & Aiding Human Decision Making	•		٠			D
Ŋ	IHE 7340	3	HFE in Mobile Computing			•			
ပိ	IHE 7360	3	Cognitive Systems Engineering			•	•		D
e)	IHE 7370	3	Medical Devices (not offered 2016-17) Manual Control (cross-listed with BSX 9020: next offered E18)			•	•		
lat	IHE 7510	3	Data Mining	•	•	•		M	D
q	IHE 7810	3	Engineering Health Systems	•		٠			
ц Л	EGR 7050	3	Design & Analysis of Engineering Experiments	•	•	•	•	М	D
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