

Human Factors and Ergonomics EFA

The field of Human Factors and Ergonomics (HFE) represents an increasingly important engineering specialty. The dramatic increase in net centric computer technology makes system performance increasingly dependent on the match between system characteristics and human capabilities. Opportunities to apply HFE are very broad and graduates with this focus area find employment in diverse industries that include healthcare (e.g., GE, Medtronic, Guidant), OEM and supplier manufacturing industry (e.g. Rockwell Collins, Boeing, Deere, Caterpillar), computer systems (e.g., Microsoft, Intel, IBM), government (e.g. NHTSA, NTSB, NASA, DoD) and consulting (e.g., Accenture, Battelle). Human Factors considers cognitive characteristics and ergonomics considers physical characteristics. The HFE EFA builds on the required coursework for undergraduate students in Industrial Engineering and provides advanced education in psychology, systems, statistics, and biomechanics. The EFA consists of 22 semester hours (SH) as listed below. Students who take 15 semester hours from the Department of Psychology (PSY) may apply for a minor in psychology (see <http://psychology.uiowa.edu/undergraduate-program/checklist-psychology-minor> for details). This requirement can be met with the four required courses (PSY:1001, PSY:2701, PSY:2811, PSY:2601, and one of the PSY electives or other electives in consultation with the advisor/coordinator). The first three courses in the table provide a general background. The math and science elective expands knowledge in analysis of data, and the three elective courses allow for an emphasis in human factors (HF) or ergonomics (Ergo).

The following courses are required:

Semester	Course #	Course	Session	SH	Pre-/Co-Requisites
4 (Spring)	PSY:2701	Introduction to Behavioral Neuroscience	All	4	PSY:1001
5 (Fall)	PSY:2601	Intro to Cognitive Psychology	Spring/Fall	3	PSY:1001
7 (Fall)	PSY:2811	Research Methods and Data Analysis in Psychology I	All	3	PSY:1001
8 (Spring)		Math and Science Elective	All	3	
8 (Spring)		Engineering Elective		3	
8 (Spring)		General Elective		3	
8 (Spring)		General Elective		3	

Engineering Elective courses*:

Course #	Course	Session	SH	Pre-/Co-Requisites	Emphasis
BME:2500	Bio-Materials/Mechanics*	F,S	4	ENGR:2110	ERGO
BME:5640	Ergonomics of Occupational Injuries	S	3	BME:2500 & ENGR:2750	ERGO
ISE:4175	Safety Engineering#	F	3		HF
ISE:5420	Automated Vehicle Systems	F	3		HF
ISE:6220	Cognitive Engineering	S	3		HF
ISE:6410	Research Methods in Human Factors Engr	F	3		HF
ISE:6440	Airborne Design of Experiments	F	3		HF
ISE:6450	Aviation Human Factors**	F	3		HF
ISE:6460	The Design of Virtual Environments	S	3		HF

General Elective courses*:

Course #	Course	Session	SH	Pre-/Co-Requisites	Emphasis
PSY:3620	Human Memory	All	3	PSY:2701, PSY 2601 & PSY:2810	HF
PSY:3040	Psychology of Learning	F	3	PSY:2810 & PSY:2701	HF
OEH:4310	Occupational Ergonomics I	F	3		ERGO
PSY: 4020:0002	Laboratory in Psychology	S	3	PSY:2701 and (PSY 2812 with minimum C- or PSY 2810 with minimum C-)	HF

Math and Science Electives:

Course #	Course	SH	Pre-/Co-Requisites
STAT:4510	Regression, Time Series, and Forecasting	3	STAT:4101 or STAT:5101
STAT:4143	Intro to Statistical Methods	3	None
STAT:3210	Experimental Design and Analysis	3	STAT:3200

*Pre-requisites may require enrollment in additional courses

** Please see department for availability.

***PSY 2810 was retired after Fall 2016. If PSY 2810 was a pre-req, PSY 2811 should work in its place.

#If not taken as a systems elective.

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