University of Kentucky

BIOMEDICAL ENGINEERING

Pathway for
Brescia
Transfers - Fall 2020

Freshman Year

First Semester			Hours
EGR 101 [*] [#]	Engineering Exploration I		1
EGR 102 [*]	Fundamentals of Engr Computing	CS 110	2
CIS/WRD 110 [*] [Δ]	Comp & Comm I	Combo - see below	3
MA 113 [*]	Calculus I	MTH 211	4
PHY 231 [*]	General University Physics I	PHS 201	4
PHY 241 [*]	General University Physics I Lab	PHS 201L	1

Second Semester			Hours
EGR 103 [*]	Engineering Exploration II		2
CIS/WRD 111 [*] [Δ]	Comp & Comm II	Combo - see below	3
MA 114 [*]	Calculus II	MTH 212	4
CHE 105 [*]	General College Chemistry I	CHM 101	4
BIO 148 [*]	Introduction to Biology I		3

Sophomore Year

First Semester			Hours
MA 213 [*]	Calculus III	MTH 213	4
PHY 232 [*]	General University Physics II	PHS 202	4
PHY 242 [*]	General University Physics II Lab	PHS 202L	1
BIO 152 [*]	Principles of Biology II		3
BME 201 [*]	Introduction to Biomedical Engineering		3
Guided EGR Elect I [1]			3

Second Semester			Hours
CHE 107	General College Chemistry II	CHM 102	3
MA 214	Calculus IV	MTH 305	3
PRD/BME 170	Human Anatomy for Design		3
PRD 272	Introduction to User Experience		2
Guided EGR Elect II [1]			3
UK Core			3

Junior Year

First Semester			Hours
BME 302	Design Strategies in Biomedical Engr		3
BME 435	Computer Modelling		4
PRD/EGR 250	Solidworks		2
PRD/BME 371	Ergonomics		1
Guided EGR Elect III [1]			3
UK Core			3

Second Semester			Hours
STA 381	Engineering Statistics		3
BME 330	Experimental Methods in Biomedical Engr		3
PRD/BME 350	Materials and Processing		3
PRD 372	UX + UI for Product Design		1
BME Basic Elect I [2]			3
UK Core			3

Senior Year

First Semester			Hours
BME 420	Senior Design I		3
BME Basic Elect II [2]			3
BME Adv Elective I [3]			3
PRD/BME 451	Integ Entrepreneurship in Prod Design		2
PGY 412G	Principles of Human Physiology		4

Second Semester			Hours
BME 421 [∞]	Senior Design II		3
BME Basic Elect III [2]			3
BME Basic Elect IV [2]			3
BME Adv Elective II [3]			3
UK Core			3

[*] Courses required for Engineering Standing. A cumulative UK GPA of at least a 2.5 and successful completion of all pre-major courses. Successful completion of the following pre-major courses with at least a 2.5 GPA: BIO 148, BIO 152, BME 201, CHE 105, CIS 110 / WRD 110, CIS 111 / WRD 111, EGR 101, EGR 102, EGR 103, MA 113, MA 114, MA 213, PHY 231, PHY 241, PHY 232 and PHY 242. If the course is repeated the best grade will be used for calculation of GPA in the pre-major courses required for Engineering Standing.

[Δ] Students taking ENG 101 (ENG 101) and ENG 102 (ENG 102) should also fulfill Oral Communications requirement.

[#] Transfer students who declare a major and meet the prerequisites will take EGR 215 "Introduction to the Practice of Engineering for Transfer Students" in place of EGR 101 and EGR 103. EGR 215 will fulfill UK Core: Arts & Creativity requirement

[∞] Graduation Composition and Communication Requirement (GCCR) course.

[1] Guided Engineering Electives (choose 3): EE 211 **or** EE 305, EM 221, EM 302, EM 313, CME 200, CME 320, ME 340.

[2]Basic Biomedical Electives (choose 4): BME 405, BME 472, BME 481G, BME 485, BME 488.

[3] Advanced Biomedical Electives (choose 2): BME 508, BME 515, BME 530, BME 540, BME 395 (may not be repeated).

Pathway for
Brescia
Transfers - Fall 2020

BIOSYSTEMS ENGINEERING

Freshman Year

First Semester			Hours
EGR 101[#]	Engineering Exploration I		1
EGR 102	Fundamentals of Engr Computing	CS 110	2
CIS/WRD 110 [*] [Δ]	Comp & Comm I	Combo - see below	3
MA 113 [*]	Calculus I	MTH 211	4
CHE 105 [*]	General College Chemistry I	CHM 101	4

Second Semester			Hours
EGR 103 [#]	Engineering Exploration II		2
CIS/WRD 111 [Δ]	Comp & Comm II	Combo - see below	3
MA 114 [*]	Calculus II	MTH 212	4
PHY 231 [*]	General University Physics I	PHS 201	4
PHY 241	General University Physics I Lab	PHS 201L	1
UK Core			3

Sophomore Year

First Semester			Hours
BAE 200[*]	Principles of Biosystems Engr		3
BIO 148	Introductory Biology I		3
MA 213 [*]	Calculus III	MTH 213	4
PHY 232	General University Physics	PHS 202	4
PHY 242	General University Physics Lab	PHS 202L	1
CE 106	Computer Graphics and Communic.		3

Second Semester			Hours
MA 214	Calculus IV	MTH 305	3
BAE 202	Statistical Inferences for Biosys Engr		3
ME 220	Engineering Thermodynamics I		3
EM 221	Statics		3
CHE 107	General College Chemistry II	CHM 102	3
UK Core			3

Junior Year

First Semester			Hours
BAE 301	Economic Analysis for Biosystems		2
ME 330	Fluid Mechanics		3
EE 305	Electrical Circuits and Electronics		3
EM 313	Dynamics		3
BIO 152	Principles of Biology II		3
WRD 204 [∞]	Technical Writing		3

Second Semester			Hours
BAE 305	DC Circuits and Microelectronics		3
EM 302	Mechanics of Deformable Solids		3
BAE 310	Heat & Mass Transf in Biosystems Engr		3
Core Elective [1]			3
UK Core			3
UK Core			

Senior Year

First Semester			Hours
BAE 402	Biosystems Engineering Design I		2
BAE 400	Senior Seminar		1
Core/Tech Elect [1]			3
Core/Tech Elect [1]			3
Core/Tech Elect [1]			3
Bio Science Elect [2]			3

Second Semester			Hours
BAE 403	Biosystems Engineering Design II		2
BAE 502	Modeling of Bio Systems		3
Core/Tech Elect [1]			3
Core/Tech Elect [1]			3
UK Core			3

[*] Courses required for Engineering Standing. A cumulative UK GPA of at least a 2.5 and successful completion of all pre-major courses. Successful completion of the following pre-major courses with at least a 2.5 GPA: CHE 105, CIS/WRD 110, MA 113, MA 114, MA 213, and PHY 231. Completion of BAE 200 with a grade of **C** or better. If a course is repeated the best grade will be used for calculation of GPA in the pre-major courses required for Engineering Standing.

[Δ] Students taking ENG 101 (ENG 101) and ENG 102 (ENG 102) should also fulfill Oral Communications requirement.

[#] Transfer students who declare a major and meet the prerequisites will take EGR 215 "Introduction to the Practice of Engineering for Transfer Students" in place of EGR 101 and EGR 103. EGR 215 will fulfill UK Core: Arts & Creativity requirement.

[∞] Graduation Composition and Communication Requirement (GCCR) course.

[1] A minimum of 9 hours are required from the Biosystems Engineering core courses: BAE 417, BAE 427, BAE 437, and BAE 447.

A minimum of 9 hours (technical electives) are to be taken in addition to the 9 core hours selected by the student. The technical electives allow the student an opportunity concentrate or gain depth in one or more of the various specialty areas of biosystems engineering. The technical electives must be selected from the courses listed below and approved by the student's academic advisor. Other courses may be considered, each on its individual merit.

Approved technical electives: ABT 360, 495; ASC 325, 364; BAE 435G, 450, 503, 505, 506, 514, 515, 516, 532, 535, 536, 537, 538, 541, 542, 543, 545, 547, 549, 580, 581, 583, 599; BCH 401G; BIO 302, 303. 304, 315, 350, 395, BME 301, 395, 472, 481G, 485, 488, 501, 530, 540, 579, 580, 599; CE 211, 303, 351, 451, 461G, 471G, 525, 551; CHE 230 (CHM 301); 236; CME 599; EE 402G; EES 530, 585; EGR 540, 542, 546, 599; FSC 434G, FSC 530, FSC 536, FSC, 538; GEO 309, 451G; ME 321, 344, 440, 501, 503, 513, 532; NRE 556, PGY 412G.

[2] Biological Science electives: BIO 208 (BIO 311), PLS 366, CE 555.

CHEMICAL ENGINEERING

Pathway for
Brescia
Transfers - Fall 2020

Freshman Year

First Semester			Hours
EGR 101[#]	Engineering Exploration I		1
EGR 102	Fundamentals of Engr Computing	CS 110	2
CIS/WRD 110 [*] [Δ]	Comp & Comm I	Combo - see below	3
MA 113 [*]	Calculus I	MTH 211	4
CHE 105 [*]	General College Chemistry I	CHM 101	4
CHE 111 [*]	General College Chemistry I Lab	CHM 101L	1

Second Semester			Hours
EGR 103[#]	Engineering Exploration II		2
CIS/WRD 111 [Δ]	Comp & Comm II	Combo - see below	3
MA 114 [*]	Calculus II	MTH 212	4
PHY 231 [*]	General University Physics I	PHS 201	4
UK Core			3

Sophomore Year

First Semester			Hours
CME 200[*]	Process Principles		3
MA 213 [*]	Calculus III	MTH 213	4
CHE 107 [*]	General College Chemistry II	CHM 102	3
CHE 113 [*]	General College Chemistry II Lab	CHM 102L	2
MSE 201	Materials Science		3
UK Core			3

Second Semester			Hours
CME 220	Computational Tools in Chem Engr		3
CME 320	Engineering Thermodynamics		3
MA 214	Calculus IV	MTH 305	3
PHY 232	General University Physics II	PHS 202	4
STA 381	Engineering Statistics		3

Junior Year

First Semester			Hours
CME 330	Fluid Mechanics		3
CME 415	Separation Processes		3
CHE 230	Organic Chemistry I	CHM 301	3
CHE 231	Organic Chemistry I Lab	CHM 301L	1
CHE 446G	Physical Chemistry for Engineers		3
WRD 204 [∞]	Technical Writing		3

Second Semester			Hours
CME 006	The Engineering Profession		0
CME 420	Process Modeling in Chemical Eng		3
CME 425	Heat and Mass Transfer		4
CME 432	Chemical Engineering Laboratory I		2
CHE 232	Organic Chemistry II	CHM 302	3
Engr/Sci Elect [1]			3

Senior Year

First Semester			Hours
CME 006	The Engineering Profession		0
CME 433	Chemical Engineering Laboratory II		3
CME 455	Chemical Engr Process Design I		3
CME 470	Professionalism, Ethics and Safety		2
CME 550	Chemical Reactor Design		3
Engr/Sci Elect [1]			3
UK Core			3

Second Semester			Hours
CME 006	The Engineering Profession		0
CME 456	Chemical Engr Process Design II		3
CME 462	Process Control		3
Engr/Sci Elect [1]			3
Engr/Sci Elect [1]			3
UK Core			3

[*] Courses required for Engineering Standing. A cumulative UK GPA of at least a 2.5 and successful completion of all pre-major courses. Successful completion of the following pre-major courses with at least a 2.5 GPA: CHE 105, CHE 107, CHE 111, CHE 113, CIS/WRD 110, MA 113, MA 114, MA 213, and PHY 231. Completion of CME 200 with a grade of **C** or better. If a course is repeated the best grade will be used for calculation of GPA in the courses required for Engineering Standing.

[Δ] Students taking ENG 101 (ENG 101) and ENG 102 (ENG 102) should also fulfill Oral Communications requirement.

[#] Transfer students who declare a major and meet the prerequisites will take EGR 215 "Introduction to the Practice of Engineering for Transfer Students" in place of EGR 101 and EGR 103. EGR 215 will fulfill UK Core: Arts & Creativity requirement.

[∞] Graduation Composition and Communication Requirement (GCCR) course.

[1] Engineering/Science Elective Structure. Students must select four courses as follows:

1. Chemical Engineering elective [CME 395, 404G, 505, 515, 523, 542, 552, 554, 556, 570, 573, 580, 599)
2. Science/math elective (totaling three or more credit hours) that is not a more elementary version of a required course. [Students may combine multiple qualifying courses that total 3 credits (e.g. pre-medical students may wish to combine PHY 241, 242 and CHE 233)]
   a. Math [MA 321, 322 (MTH 308), 416G (MTH 415), 432G, 433G, 471G (MTH 405), 481G]
   b. Chemistry [CHE 226 (CHM 205 & 205L), 250, 510 and above]
   c. Biology (BIO 148 and above)
   d. Physics [PHY 241 (PHS 201L)and above]
   e. Other courses by approval of Director of Undergraduate Studies
3. Engineering elective (level 300 and above) that does not significantly duplicate content in a core chemical engineering course (e.g. ME 330) OR a CME Elective (CME 395 & above).
4. Chemical engineering elective (CME 395 and above) OR one engineering elective (level 300 and above) OR one science/math elective as described above.

*CME 395 (3 credits) may be used to satisfy only one elective requirement.

CIVIL ENGINEERING

Pathway for
Brescia
Transfers - Fall 2020

Freshman Year

First Semester			Hours
EGR 101 [#]	Engineering Exploration I		1
EGR 102	Fundamentals of Engr Computing	CS 110	2
CIS/WRD 110 [*] [Δ]	Comp & Comm I	Combo - see below	3
MA 113[*]	Calculus I	MTH 211	4
CHE 105[*]	General College Chemistry I	CHM 101	4

Second Semester			Hours
EGR 103 [*][#]	Engineering Exploration II		2
CIS/WRD 111 [Δ]	Comp & Comm II	Combo - see below	3
MA 114[*]	Calculus II	MTH 212	4
PHY 231[*]	General University Physics I	PHS 201	4
PHY 241[*]	General University Physics I Lab	PHS 201L	1
UK Core			

Sophomore Year

First Semester			Hours
CE 211 [*]	Surveying		4
CHE 107[*]	General College Chemistry II	CHM 102	3
EM 221[*]	Statics		3
MA 213[*]	Calculus III	MTH 213	4
CE 106 [*]	Comp Graphics & Communications		3

Second Semester			Hours
EM 302	Mechanics of Deformable Solids		3
MNG 303	Deformable Solids Laboratory		1
MA 214	Calculus IV	MTH 305	3
PHY 232	General University Physics	PHS 202	4
PHY 242	General University Physics Lab	PHS 202L	1
STA 381 or 296	Engr Stats or Stat Methods & Motivation		3

Junior Year

First Semester			Hours
WRD 204 [∞]	Technical Writing		3
EES 220	Principles of Physical Geology		4
CE 303	Intro to Construction Engineering		3
CE 341	Intro to Fluid Mechanics		4
CE 381	Civil Engineering Materials I		3

Second Semester			Hours
CE 331	Transportation Engineering		3
CE 351	Intro to Environmental Engineering		3
CE 482	Structural Analysis and Design		3
Engr/Sci Elect [1]			3
Math/Science Elect			3

Senior Year

First Semester			Hours
CE 461G	Water Resources Engineering		4
CE 471G	Soil Mechanics		4
Design Elective [4]			3
Technical Elective [3]			3
UK Core			3

Second Semester			Hours
CE 401	Seminar		1
CE 429	Civil Engineering Systems Design		3
Design Elective [4]			3
Technical Elective [3]			3
UK Core			3
UK Core			3

[*] Courses required for Engineering Standing. A cumulative UK GPA of at least a 2.5 and successful completion of all pre-major courses. Successful completion of the following pre-major courses with at least a 2.5 GPA: CE 106, CE 211, CHE 105, CHE 107, CIS/WRD 110, EGR 103, EM 221, MA 113, MA 114, MA 213, PHY 231 and PHY 241 and a **C** or better in each course. If a course is repeated the best grade will be used for calculation of GPA in the courses required for Engineering Standing.

[Δ] Students taking ENG 101 (ENG 101) and ENG 102 (ENG 102) should also fulfill Oral Communications requirement.

[∞] Graduation Composition and Communication Requirement (GCCR) course.

[#] Transfer students who declare a major and meet the prerequisites will take EGR 215 "Introduction to the Practice of Engineering for Transfer Students" in place of EGR 101 and EGR 103. EGR 215 will fulfill UK Core: Arts & Creativity requirement.

[1] EGR Science Elective: To be chosen from ME 220 or EM 313.

[2] Math or Science Elective Options: MA 321, MA 322 (MTH 308), MA 416G (MTH 415), MA 432G, BIO 208 (BIO 311), CHE 230 (CHM 301), CHE 236, EE 305, GEO 409, EES 550, EES 585, MNG 551, or the other half of the Engineering Science Elective in [1]. NOTE: MA 322 is required for a Math minor.

[3] Technical Elective is chosen from any of the courses at the 300-level or above that carry a CE prefix and in which a student is qualified to enroll, exclusive of required courses. Engineering elective courses are typically taught once a year.

[4]] Students are required to select two design electives from different areas. Choose from: CE 508, CE 531 or CE 533, CE 534, CE 549, CE 551 or 599, CE 579, CE 589. Design elective courses are typically taught once a year.

COMPUTER ENGINEERING

Pathway for
Brescia
Transfers - Fall 2020

Freshman Year

First Semester			Hours
EGR 101 [#]	Engineering Exploration I		1
EGR 102	Fundamentals of Engr Computing	CS 110	2
CIS/WRD 110 [*] [Δ]	Comp & Comm I	Combo - see below	3
MA 113	Calculus I	MTH 211	4
CHE 105 [*]	General College Chemistry I	CHM 101	4

Second Semester			Hours
EGR 103 [#]	Engineering Exploration II		2
CIS/WRD 111 [Δ]	Comp & Comm II	Combo - see below	3
MA 114	Calculus II	MTH 212	4
PHY 231 [*]	General University Physics I	PHS 201	4
PHY 241	General University Physics I Lab	PHS 201L	1
CS 215 [*]	Intro to Prog Dsgn, Abstr & Prob Solv		4

Sophomore Year

First Semester			Hours
MA 213	Calculus III	MTH 213	4
PHY 232	General University Physics	PHS 202	4
PHY 242	General University Physics Lab	PHS 202L	1
CS 216 [*]	Intro to Software Engr Techniques		3
CPE 200	Comp Engr Sophomore Seminar		1
CPE 282 [*]	Digital Logic Design		4

Second Semester			Hours
MA 214	Calculus IV	MTH 305	3
EE 211	Circuits I		4
CPE 287	Intro to Embedded Systems		4
CS 270	Systems Programming		3
CS 275	Discrete Mathematics		4

Junior Year

First Semester			Hours
EE 223	AC Circuits		4
CS 315	Algorithm Design and Analysis		3
CPE 380	Computer Organization		3
STA 381	Engineering Statistics A Concept App		3
UK Core			3

Second Semester			Hours
EE 421G	Signals and Systems		3
EE 461G	Introduction to Electronics		3
Technical Elect [2]			3
CPE 480[1]	Advanced Computer Architecture		3
UK Core			3

Senior Year

First Semester			Hours
CPE 490[1][∞]	ECE Capstone Design I		3
CPE Elective [3]			3
CPE Elective [3]			3
Technical Elect [2]			3
UK Core			

Second Semester			Hours
CPE 491 [1]	ECE Capstone Design II		3
Hardware Elect [4]			3
Software Elect [5]			3
CPE Elective [3]			3
UK Core			3

[*] Courses required for Engineering Standing. A cumulative UK GPA of at least a 2.5 and successful completion of all pre-major courses. Successful completion of the following pre-major courses with at least a 2.5 GPA: CHE 105, CIS/WRD 110, CS 215, CS 216, EE/CPE 282, and PHY 231. If a course is repeated, the best grade will be used for calculation of GPA in the courses required for Engineering Standing.

[Δ] Students taking ENG 101 (ENG 101) and ENG 102 (ENG 102) should also fulfill Oral Communications requirement.

[#] Transfer students who declare a major and meet the prerequisites will take EGR 215 "Introduction to the Practice of Engineering for Transfer Students" in place of EGR 101 and EGR 103. EGR 215 will fulfill UK Core: Arts & Creativity requirement.

[∞] Graduation Composition and Communication Requirement (GCCR) course.

[2] Technical electives may be selected from upper-division engineering, mathematics, statistics, statistics, computer science, physics, or other technically-related fields excluding more elementary version of required courses. To be selected in consultation with academic advisor. If a student wishes to use CS 499 instead of CPE 490 and CPE 491 to fulfill the GCCR and senior design requirements, the student must receive approval from the DUS to select an additional technical elective that supports the proposed CS 499 project.

[3] 400 level CS courses and 500 level CPE courses with emphasis in the computer engineering area and excluding EE 595. To be selected in consultation with academic advisor.

[4] Hardware electives are senior level courses in the CPE or EE disciplines and shall be selected from the following list and/or selected in consultation with academic advisor:

EE 582	Hardware Description Languages and Programmable Logic
CPE 584	Introduction of VLSI Design and Testing
CPE 585	Fault Tolerant Computing
CPE 586	Communication and Switching Networks

[5] Software electives are senior level courses in the CPE or CS disciplines and shall be selected from the following list and/or selected with academic advisor:

CS 441G	Compilers for Algorithmic Languages
CS 471G	Networking and Distributed Operating Systems
CS 570	Modern Operating Systems
CPE 588	Real-Time Digital Systems

University of Kentucky

COMPUTER SCIENCE

Pathway for
Brescia
Transfers - Fall 2020

Freshman Year

First Semester			Hours
EGR 101 [#]	Engineering Exploration I		1
EGR 102	Fundamentals of Engr Computing	CS 110	2
CIS/WRD 110 [Δ]	Comp & Comm I	Combo - see below	3
MA 113	Calculus I	MTH 211	4
CHE 105 or	Gen Col Chemistry I or	CHM 101	
PHY 231	Gen Univ Physics I	PHS 201	4
PHY 241	General Physics Lab	PHS 201L	1

Second Semester			Hours
EGR 103 [#]	Engineering Exploration II		2
CIS/WRD 111 [Δ]	Comp & Comm II	Combo - see below	3
MA 114 [*]	Calculus II	MTH 212	4
PHY 231 or	Gen Univ Physics I	PHS 201	
CHE 105	Gen Col Chemistry I	CHM 101	4
CS 215 [*]	Intro to Prog Dsgn, Abstr & Prob Solv		4

Sophomore Year

First Semester			Hours
MA 213	Calculus III	MTH 213	4
CS 216 [*]	Intro to Software Engr Techniques		3
EE 280	Design of Logic Circuits		3
CS 275 [*]	Discrete Mathematics		4
UK Core			3

Second Semester			Hours
CS 270	Systems Programming		3
CS 315	Algorithm Design and Analysis		3
Technical Elect [3]			3
Science Elect [5]			3
UK Core			3

Junior Year

First Semester			Hours
CS 371	Intro to Computer Networking		3
CS/MA 321	Intro to Numerical Meth	MTH 340	3
or MA 322	or Matrix Algebra	MTH 308	
CS Elective [2]			3
CS Elective [2]			3
STA 381	Engr Statistics: A Conceptual Approach		3

Second Semester			Hours
CS 375	Logic and Theory of Computing		3
CS Elective [2]			3
CS Elective [2]			3
Natural Sci Elective[1]			3
Technical Elect [3]			3
UK Core			3

Senior Year

First Semester			Hours
CS 498	Software Engr for Senior Project		3
CS Elective [2]			3
Technical Elect [3]			3
Free Elective [4]			4
UK Core			3

Second Semester			Hours
CS 499 [∞]	Senior Design Project		3
CS Elective [2]			3
Technical Elect [3]			3
Free Elective [3]			3
Free Elective [3]			3

[*] Courses required for Engineering Standing. A cumulative UK GPA of at least a 2.5 and successful completion of all pre-major courses. Successful completion of the following pre-major courses with at least a 2.5 GPA: CS 215, CS 216, CS 275, and MA 114. If a course is repeated, the best grade will be used for calculation of GPA in the courses required for Engineering Standing.

[Δ] Students taking ENG 101 (ENG 101) and ENG 102 (ENG 102) should also fulfill Oral Communications requirement.

[#] Transfer students who declare a major and meet the prerequisites will take EGR 215 "Introduction to the Practice of Engineering for Transfer Students" in place of EGR 101 and EGR 103. EGR 215 will fulfill UK Core: Arts & Creativity requirement.

[∞] Graduation Composition and Communication Requirement (GCCR) course.

[1] Any natural science course excluding more elementary versions of completed required courses.

[2] Computer Science Elective (18 credit hours) include 300-level and above computer science courses with at least three to be selected from: CS 335, CS 378, CS 405G, CS 441G, CS 450G, CS 460G and CS 463G. Students are encouraged to take advantage of special topics courses, cooperative education, independent studies and undergraduate research.

[3] Technical Electives - include any 300-level and above courses in computer science, electrical engineering, mathematics and business and economics. MA 214 (MTH 305) is also an acceptable technical elective. Cooperative education credit may be used to satisfy this requirement.

[4] Elective - including one Free Elective and Non-Technical Elective. As least two of the electives (6 credits) cannot be in computer science, mathematics, science or engineering. Free Elective (3 credits) can be any course that carries college credit and is not a more elementary version of a required courses. Note: at least 128 credit hours; a foreign language requirement.

[5] Science elective - must be selected from either UK Core Natural Science or Social Science approved list or by consent of academic advisor.

ELECTRICAL ENGINEERING

Pathway for
Brescia
Transfers - Fall 2020

First Semester			Hours
EGR 101 [#]	Engineering Exploration I		1
EGR 102	Fundamentals of Engr Computing	CS 110	2
CIS/WRD 110 [*] [Δ]	Comp & Comm I	Combo - see below	3
MA 113	Calculus I	MTH 211	4
PHY 231[*]	General University Physics I	PHS 201	4
PHY 241	General University Physics I Lab	PHS 201L	1

Second Semester			Hours
EGR 103 [#]	Engineering Exploration II		2
CIS/WRD 111 [Δ]	Comp & Comm II	Combo - see below	3
MA 114	Calculus II	MTH 212	4
CHE 105 [*]	General College Chemistry I	CHM 101	4
CS 215 [*]	Intro to Prog Dsgn, Abstrac & Prob Solvg		4

Sophomore Year

First Semester			Hours
MA 213	Calculus III	MTH 213	4
PHY 232	General University Physics II	PHS 202	4
PHY 242	General University Physics Lab	PHS 202L	1
EE 211 [*]	Circuits I		4
EE/CPE 282 [*]	Digital Logic Design		4

Second Semester			Hours
MA 214	Calculus IV	MTH 305	3
EE 223	AC Circuits		4
EE/CPE 287	Introduction to Embedded Systems		4
UK Core			3
UK Core			3

Junior Year

First Semester			Hours
EE 415G	Electromechanics		3
EE 421G	Signals and Systems		3
EE Lab Elective [4]			2
EE 461G	Introduction to Electronics		3
MA 320/STA 381	Intro Probability/Engineering Stats		3
Technical Elect [3]			3

Second Semester			Hours
EE 468G	Intro to Engineering Electromagnetics		4
EE Lab Elective [4]			2
Engr/Sci Elective [2]			3
Technical Elect [3]			3
UK Core			3

Senior Year

First Semester			Hours
EE/CPE 490 [∞][5]	ECE Capstone Design I		3
EE Tech Elect [6]			3
EE Tech Elect [6]			3
Math/Stat Elective [1]			3
UK Core			3

Second Semester			Hours
EE/CPE 491 [5]	ECE Capstone Design II		3
EE Tech Elect [6]			3
EE Tech Elect [6]			3
Engr/Sci Elective [2]			3
UK Core			3

[*] Courses required for Engineering Standing. A cumulative UK GPA of at least a 2.5 and successful completion of all pre-major courses. Successful completion of the following pre-major courses with at least a 2.5 GPA: CIS/WRD 110, CHE 105, CS 215, EE 211, EE/CPE 282, and PHY 231. If a course is repeated, the best grade will be used for calculation of GPA in the courses required for Engineering Standing.

[Δ] Students taking ENG 101 (ENG 101) and ENG 102 (ENG 102) should also fulfill Oral Communications requirement.

[#] Transfer students who declare a major and meet the prerequisites will take EGR 215 "Introduction to the Practice of Engineering for Transfer Students" in place of EGR 101 and EGR 103. EGR 215 will fulfill UK Core: Arts & Creativity requirement

[∞] Graduation Composition and Communication Requirement (GCCR) course.

[1] Math/Statistics Elective: Any upper-division (300-level or higher) math or statistics course excluding MA 308 and MA 310 (3 credit hours total).

[2] Engineering/Science Electives: Any engineering, physics, computer science, or math course at the 200-level or higher, other than an electrical engineering course and excluding MA 308, MA 310, and more elementary versions of required courses (6 credit hours total). Cooperative education credit may not be used to satisfy this requirement.

[3] Technical elective may be selected from upper-division (300-level or higher) engineering, mathematics, statistics, computer science, physics, or other technically-related fields excluding MA 308, MA 310, EE 305 and more elementary versions of required courses, to be selected in consultation with the academic advisor (3 credit hours total). Cooperative education credit may not be used to satisfy this requirement.

[4] Electrical Engineering Laboratory Elective: EE 462G, EE 422G, EE 416G (4 credit hours total)

[6] Electrical Engineering Technical Electives: EE 503, 511, 512, 513, 517, 518, 522, 523, 525, 527, 531, 532, 533, 535, 536, 537, 538, 539, 543, 546, 560, 566, 567, 568, 569, 571, 572, 582, 584, 585, 586, 587, 588, 589, 599

MATERIALS ENGINEERING

Pathway for Brescia

Transfers - Fall 2020

Freshman Year

First Semester			Hours
EGR 101 [#]	Engineering Exploration I		1
EGR 102	Fundamentals of Engr Computing	CS 110	2
CIS/WRD 110 [*] [Δ]	Comp & Comm I	Combo - see below	3
MA 113[*]	Calculus I	MTH 211	4
CHE 105[*]	General College Chemistry I	CHM 101	4
CHE 111[*]	General College Chemistry I Lab	CHM 101L	1

Second Semester			Hours
EGR 103 [#]	Engineering Exploration II		2
CIS/WRD 111 [Δ]	Comp & Comm II	Combo - see below	3
MA 114[*]	Calculus II	MTH 212	4
PHY 231[*]	General University Physics I	PHS 201	4
PHY 241[*]	General University Physics I Lab	PHS 201L	1
UK Core			3

Sophomore Year

First Semester			Hours
MA 213[*]	Calculus III	MTH 213	4
MSE 201 [*]	Materials Science I		3
MSE 202	Materials Science Laboratory		1
CHE 107[*]	General College Chemistry II	CHM 102	3
CHE 113[*]	General College Chemistry II Lab	CHM 102L	2
EM 221	Statics		3

Second Semester			Hours
MA 214	Calculus IV	MTH 305	3
MSE 301	Materials Science II		3
MSE 351	Materials Thermodynamics		3
PHY 232	General University Physics II	PHS 202	4
CHE 236	Survey of Organic Chemistry		3

Junior Year

First Semester			Hours
MSE 401G	Metal and Alloys		3
MSE 404G	Polymeric Materials		3
CME 200	Process Principles		3
EM 302	Mechanics of Deformable Solids		3
STA 381	Engineering Statistics A Concept App		3
UK Core			3

Second Semester			Hours
MSE 402G	Electronic Materials and Processing		3
MSE 403G	Ceramic Engineering and Processing		3
MSE 407 [∞]	Materials Laboratory I		3
MSE 535	Mechanical Properties of Materials		3
PHY 361	Principles of Modern Physics		3

Senior Year

First Semester			Hours
MSE 408	Materials Laboratory II		3
MSE 436	Material Failure Analysis		3
MSE 470	Application of Matls Engr to Dsgn Probs		1
MSE 585	Materials Characterization Techniques		3
EE 305	Electrical Circuits and Electronics		3
Technical Elect [1]			3

Second Semester			Hours
MSE 480	Materials Design		3
MSE 538	Metals Processing		3
Technical Elect [1]			3
UK Core			3
UK Core			3

[*] Courses required for Engineering Standing. A cumulative UK GPA of at least a 2.5 and successful completion of all pre-major courses. Successful completion of the following pre-major courses with at least a 2.5 GPA: CHE 105, CHE 107, CHE 111, CHE 113, CIS/WRD 110, MA 113, MA 114, MA 213, PHY 231, and PHY 241. Completion of MSE 201 with a grade of C or better. If a course is repeated, the best grade will be used for calculation of GPA in the courses required for Engineering Standing.

[Δ] Students taking ENG 101 (ENG 101) and ENG 102 (ENG 102) should also fulfill Oral Communications requirement.

[#] Transfer students who declare a major and meet the prerequisites will take EGR 215 "Introduction to the Practice of Engineering for Transfer Students" in place of EGR 101 and EGR 103. EGR 215 will fulfill UK Core: Arts & Creativity requirement.

[∞] Graduation Composition and Communication Requirement (GCCR) course.

[1] Technical Electives - total of 6 credit hours and must be chosen. Technical electives are to be selected from a technical discipline, with approval from the Director of Undergraduate Studies. At least 3 credit hours must come from a course with a MSE prefix. MSE 395 (research) may count for one elective, but not both. Recommended technical electives include but are not limited to: MSE 395, 506, 531, 552, 554, 556, 569, 599; BME 488; CHE 580; CME 542, 599; MA 322, 422, 432G; ME/MFS 503

MECHANICAL ENGINEERING

Pathway for
Brescia
Transfers - Fall 2020

Freshman Year

First Semester			Hours
EGR 101 [*][#]	Engineering Exploration I		1
EGR 102 [*]	Fundamentals of Engr Computing	CS 110	2
CIS/WRD 110 [Δ]	Comp & Comm I	Combo - see below	3
MA 113[*]	Calculus I	MTH 211	4
PHY 231[*]	General University Physics I	PHS 201	4
PHY 241 [*]	General University Physics I Lab	PHS 201L	1

Second Semester			Hours
EGR 103 [*][#]	Engineering Exploration II		2
CIS/WRD 111 [*]	Comp & Comm II	Combo - see below	3
MA 114[*]	Calculus II	MTH 212	4
CHE 105[*]	General College Chemistry I	CHM 101	4
UK Core			3

Sophomore Year

First Semester			Hours
MA 213[*]	Calculus III	MTH 213	4
PHY 232 [*]	General University Physics II	PHS 202	4
PHY 242 [*]	General University Physics Lab	PHS 202L	1
EM 221 [*]	Statics		3
ME 205	Computer Aided Engr Graphics		3
UK Core			3

Second Semester			Hours
MA 214	Calculus IV	MTH 305	3
ME 220	Engineering Thermodynamics		3
ME 251	Intro to Matls & Mfg Processes		3
EM 313	Dynamics		3
CHE 107	General College Chemistry II	CHM 102	3
UK Core [%]			

Junior Year

First Semester			Hours
EM 302	Mechanics of Deformable Solids		3
EE 305	Electrical Circuits and Electronics		3
ME 330	Fluid Mechanics		3
ME 340	Intro to Mechanical Systems		3
WRD 204 [∞]	Technical Writing		3

Second Semester			Hours
ME 310	Engineering Experimentation I		3
ME 321	Engineering Thermodynamics II		3
ME 325	Elements of Heat Transfer		3
ME 344	Mechanical Design		3
Math Elective [2]			3

Senior Year

First Semester			Hours
ME 411	ME Capstone Design I		3
ME 311	Engineering Experimentation II		3
ME 440	Design of Control Systems		3
ME 501	Mech Dsgn w/ Finite Element Meth		3
Technical Elect [1]			3

Second Semester			Hours
ME 412	ME Capstone Design II		3
Technical Elect [1]			3
Technical Elect [1]			3
UK Core			3
UK Core			3

[*] Courses required for Engineering Standing. A cumulative UK GPA of at least a 2.5 and successful completion of all pre-major courses. Successful completion of the following pre-major courses with at least a 2.5 GPA: CHE 105, CIS/WRD 111, EGR 101, EGR 102, GR 103, EM 221, MA 113, MA 114, MA 213, PHY 231, PHY 241, PHY 232, and PHY 242 and a **C** or better in each course. If a course is repeated, the best grade will be used for calculation of GPA in the courses required for Engineering Standing.

[Δ] Students taking ENG 101 (ENG 101) and ENG 102 (ENG 102) should also fulfill Oral Communications requirement.

[#] Transfer students who declare a major and meet the prerequisites will take EGR 215 "Introduction to the Practice of Engineering for Transfer Students" in place of EGR 101 and EGR 103. EGR 215 will fulfill UK Core: Arts & Creativity requirement.

[∞] Graduation Composition and Communication Requirement (GCCR) course.

[%] UK Core - Statistical Inferential Reasoning. Recommended: STA 210 or STA 381.

[1] Technical Electives - Choose 9 hours from the following: ME 380, ME 395, ME 416, ME 417, ME 418, ME/MFS 503. ME/MFS 505, ME/MSE 506, ME/MFS 507, ME 510, ME/MFS 511, ME/MFS 512, ME 513, ME 514, ME 515, ME 516, ME/EE/MFS 526, ME 527, ME 530, ME 531, ME 532, ME 548, ME 549, ME/MFS/CME/MSE 554, ME/EE/MSE 555, ME/CME/MFS/MSSE 556, ME 560, ME 563, ME 565, ME/EE/MSE 570, ME/BAE 580, ME/BAE/EGR/MFS/EE 583, ME 599, MFS 699.

Students are allowed one non-technical Mechanical Engineering Elective: BAE 502, 515, 516; BME 405, 472, 485, 488, 508, 515, 530, 540, 579, 580; EGR 537, 540, 542, 546, 553; MFS 509, MNG/MFS 520, MFS 525, 599; MSE 201

[2] Mathematics Elective: MA 320, 321 (MTH 340), 322 (MTH 308), 416G (MTH 415), 432G, 433G, 481G; STA 381

University of Kentucky

Pathway for
Brescia
Transfers - Fall 2020

MINING ENGINEERING

Freshman Year

First Semester			Hours
EGR 101 [#]	Engineering Exploration I		1
EGR 102	Fundamentals of Engr Computing	CS 110	2
CIS/WRD 110 [*] [Δ]	Comp & Comm I	Combo - see below	3
MA 113[*]	Calculus I	MTH 211	4
CHE 105[*]	General College Chemistry I	CHM 101	4

Second Semester			Hours
EGR 103[#]	Engineering Exploration II		2
CIS/WRD 111 [Δ]	Comp & Comm II	Combo - see below	3
MA 114[*]	Calculus II	MTH 212	4
PHY 231[*]	General University Physics I	PHS 201	4
PHY 241 or	Gen Univ Physics I Lab or	PHS 201L	1
CHE 111	Gen Col Chemistry I Lab	CHM 101L	1
UK Core			3

Sophomore Year

First Semester			Hours
EES 220	Principles of Physical Geology		4
EM 221	Statics		3
MA 213[*]	Calculus III	MTH 213	4
MNG 201	Mining Engineering Fundamentals		3
PHY 232	General University Physics	PHS 202	4

Second Semester			Hours
EES 230	Fundamentals for Geology I		3
EM 302	Mechanics of Deformable Solids		3
MA 214	Calculus IV	MTH 305	3
MNG 291	Elements of Mine Design		3
MNG 303	Deformable Solids Laboratory		1
MNG 331	Explosives and Blasting		2
MNG 322	Mine Safety & Health Manage & Process		2

Junior Year

First Semester			Hours
EM 313	Dynamics		3
MNG 211	Mine Surveying		2
MNG 301	Minerals Processing		3
MNG 335 [2]	Intro to Mine Systems Analysis		3
MNG 463	Surface Mine Design		3
UK Core			3

Second Semester			Hours
MNG 311	Electrical Circuits & Mining Machinery		3
CE 341 [√]	Intro to Fluid Mechanics		4
MNG 371 [∞]	Prof Development of Mining Engineers		3
MNG 435	Mine Systems Engr and Economics		3
MNG 551	Rock Mechanics		4

Senior Year

First Semester			Hours
MNG 332	Mine Plant Machinery		3
MNG 341	Mine Ventilation		3
MNG 351	Underground Mine Design		3
MNG 591	Mine Design Project I		1
UK Core			3

Second Semester			Hours
MNG 592	Mine Design Project II		3
MNG/BAE 535	Environ Contl Syst Dsgn & Reclama		3
Min Pro Tech Elect[1]			3
Technical Elect [3]			3
UK Core			3

[*] Courses required for Engineering Standing. A cumulative UK GPA of at least a 2.5 and successful completion of all pre-major courses. Successful completion of the following pre-major courses with at least a 2.5 GPA: CIS/WRD 110, CHE 105, MA 113, MA 114, MA 213, and PHY 231. If a course is repeated, the best grade will be used for calculation of GPA in the pre-major courses.

[Δ] Students taking ENG 101 (ENG 101) and ENG 102 (ENG 102) should also fulfill Oral Communications requirement.

[#] Transfer students who declare a major and meet the prerequisites will take EGR 215 "Introduction to the Practice of Engineering for Transfer Students" in place of EGR 101 and EGR 103. EGR 215 will fulfill UK Core: Arts & Creativity requirement.

[∞] Graduation Composition and Communication Requirement (GCCR) course.

[v] Offered only in the Spring semester for Mining students.

[1] Mineral Processing Technical Elective is to be chosen between MNG 575 Coal Preparation Design and MNG 580 Mineral Processing Plant Design.

[2] MNG 335 satisfies the Statistical Inferential Reasoning requirement in the UK Core.

[3] Technical Electives: These courses must be chosen with the approval of the student's advisor to ensure that the curriculum includes sufficient engineering design content. Students are required to select their technical elective from the departmental courses listed below: MNG 511, 531, 541, 552, 555, 561, 575, 580, 585, 599; MNG/MFS 520.