BIOENGINEERING ENGINEERING TRANSFER, AS **OSU ADVISING GUIDE**

Prerequisites and Course Availability per Term (for complete information, see 2016-2017 UCC Catalog)

REVISED 11/19/16

			Te	rm (Offe	red	Credits		
	U	JCC Course No. and Course Name	F	W	S	S	S	Prerequisites/Notes	
	CH 221 ^{E, 2}	General Chemistry I /Lec/Lab/Rec	х				5	MTH 111	
_									
Term	ENGR 111	Engineering Orientation I	х				3	MTH 65	
ř	MTH 251 ^{E, 2}	Calculus I	х	Х			5	MTH 112	
	WR 121 ^{E, 2}	English Composition: Intro to Argument	х	х	х	х	4	WR 115 or Placement Test	17
	CH 222	General Chemistry II		Х			5	CH 221	
7	HPE 295	Wellness & Health	х	х	х	х	3		
Term	ENGR 112 ^{E, 2}	Problem Solving & Technology		х			3	ENGR 111	
Ĕ	MTH 252 ^E	Calculus II		х	х		4	MTH 251	
	BI 231	Human Anatomy & Physiology	х	х			4	CH 104 or CH 112	19
	Perspectives ⁶	General Ed Reg - See Advisor	х	х	х	х	3	Perspectives Elective	
က	CH 223 ^{E, 2}	General Chemistry III		х			5	CH 221	
Term (MTH 253 ^{E, 2}	Calculus III			х		4	DRF 112 CAD I	
Ĕ	MTH 261 ^{E, 2}	Linear Algebra			х		2	MTH 111 Algebra	
	ENGR 245 ³	Engineering Graphics - Solidworks			х		3	DRF 112 CAD I	17
ner									
Summer									
(C)									
	ENGR 201 ^{E, 2}	Electrical Fundamentals	х				4	MTH 251 Co-requisite	
4	ENGR 211 ^{E, 2}	Statics	х				4	MTH 112	
_	MTH 254 ^{E, 2}	Vector Calculus I	x				4	MTH 252	
<u>–</u>	PH 211 ^E	Physics I w/Calculus	x				5	MTH 251 Co-requisite	
									17
	ENGR 212 ^{3, 4}	Dynamics		х			4	ENGR 211	
	MTH 256 ^{E, 2}	Differential Equations		Х			4	MTH 252	
Term 5	PH 212 ^{E, 2}	Physics II w/Calculus		Х			5	PH 211	
 	WR 227	Technical Report Writing	х	Х	х	х	4	WR 222	
	BI 234	Microbiology	x				4	CH 221	21
	ENGR 213 ³	Strength of Materials		Α	Х		4	ENGR 211	
4-	SP 111 ^{E, 2}	Public Speaking	x	х	X		4	WR 095	
Term 6	PH 213 ^{E, 2}	Physics III w/Calculus		_	x		5	PH 212	
He	Perspectives ⁶	General Ed Req - See Advisor	х	х	x	х	3	Perspectives Elective	
	BI 233	Human Anatomy & Physiology	 ^	_	X		4	BI 231 & Instructor Approval	20
	טו 200	TOTAL DEGREE CREDITS ⁷			_ ^	_ ^	111	2. 201 a mondotor Approval	

CH 201 / CH 231 Lec & CH 261 Lab CBEE 101 MTH 251 WR 121 CH 202+CH 205 Lab / CH 232 Lec & CH 262 Lab	2 4 3 4
CBEE 101 MTH 251 WR 121 CH 202+CH 205 Lab / CH 232 Lec & CH 262 Lab	2 4 3
MTH 251 WR 121 CH 202+CH 205 Lab / CH 232 Lec & CH 262 Lab	4
MTH 251 WR 121 CH 202+CH 205 Lab / CH 232 Lec & CH 262 Lab	4
WR 121 CH 202+CH 205 Lab / CH 232 Lec & CH 262 Lab	3
CH 202+CH 205 Lab / CH 232 Lec & CH 262 Lab	
	4
LULC 224 8 LUC 244	
HHS 231 & HHS 241	3
CBEE 102	3
MTH 252	4
BI 231	4
Perspectives Elective - See OSU General Ed Req	3
CH 233 Lec & CH 263 Lab	4
UCC MTH 253 & MTH 261 = OSU MTH 306	4
See note above for MTH 306	0
Engineering Selection	3
ENGR 201	3
ENGR 211	3
MTH 254	4
PH 211 & PH 221 Rec	4
Engineering Selection	3
MTH 256	4
PH 212 & PH 222 Rec	4
WR 327	3
BI 230	4
Engineering Selection	3
COMM 111	3
PH 213 & PH 223 Rec	4
Perspectives Elective - See OSU General Ed Req	3
BI 233	4

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*A grade of "C" or better is required in all courses.

Program Advisor:

NOTES:

- 1. This is a rigorous degree program and may take a minimum of 5 years to complete. Transfer students typically take 3 years of course work at OSU. Meeting with Advisor early and development of term x term planner is important
- 2. ^ERequired by OSU College of Engineering for entry into the Pro Program

Link to OSU/UCC General Ed Transfer for Bac Core Courses is

- 3. ENGR 245, ENGR 212, ENGR 213 are approved electives for OSU "Engineering Selections". See attached OSU Advising Guide. Note that OSU "Engineering Selections" can be taken at OSU during pro-school, and that other approved electives are available at OSU. Taking the courses at OSU would reduce UCC total credits by 12 credits for total of 99 credits.
- 4. UCC CH 241 & 242 Organic Chemistry courses are equivalent to OSU CH 331 & 332 Organic Chemistry. There are several alternatives for taking these courses. Students at UCC for 3 years could take at UCC. Note that UCC CH 242 could potentially be taken in winter quarter instead of ENGR 212 (and Engineer Selecton taken at OSU). Another option is to take CH 331 & 332 at OSU for students that will be at OSU for 3 years. See Advisor.
- 5. OSU offers CBEE 280(6 credits) online during summer quarter with OSU advisor approval. CBEE 280 is the online equivalent of CBEE 211 and CBEE212.
- 6. Students can take 5 Perspective Electives for Humanties/Social Science at UCC that transfer to OSU as General Ed requirements. See Advisor. http://admissions.oregonstate.edu/baccalaureate-core-course-equivalencies-umpqua-community-college
- 7. A maximum of 108 credit hours count towards the AS degree. Additional courses can be taken at UCC. A maximum of 124 credits (OSU course credits) will transfer.

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Synthesis (3)	Perspedives (3)	Engineering selection ² (3F)	DPD ⁴ (3)	Tech. Writing WR 327 (3FWS)	Perspectives (3)	Anatomy & Physiology BI 233 (3S)	Biology selection ¹ (2 or 4)	Anatomy & Physiology <mark>BI 231</mark> (3F)			
Synthesis (3)	BIOE Selection ³ (3W)	Process Engr Laboratory CBEE 414^ (3F)	Perspectives (3)	Engineering Selection (3)	Professionalism & engrethics CBEE 320	Process Analysis CBEE 213 (4S)	*Energy Balances CBEE 212 (3W)	*Material Balances CBEE 211 (3F)	*Speech Communication COMM 111/114 (3FWS)	*English Composition WR 121 (3FWS)	Lifetime fitness HHS 231 (2) and HHS 24X or PAC(1) (3FWS)
Bicengineering product design II BIOE 492 (4)	Bicengineering Product Design BIOE 491 (4)	Bioengineering Process Design BIOE 490 (4)	Biornaterials & Biornterfaces BIOE 351 (3)	Social Justice, Ethics in ENGR BIOE 420 (3W)	Thermody- namics CHE 311 (3F)	*Electrical ENGR Fundamentals ENGR 201 (3FWS)	*General Physics PH 213 (4WS)	*General Physics PH 212 (4FWS)	*General Physics PH 211 (4FWS)	*ENGR Problem Solving CBEE 102 (3W)	BIOE Orientation CBEE 101 (3F)
BIOE selection ³ (3)	Bioengineering Laboratory BIOE 415 (3)	Bioreactors BIOE 457 (3F)	Transport III CHE 333 (3S)	Transport II CHE 332 (3W)	Transport I CHE 331 (4F)	*Statics ENGR 211 (3FWS)	Organic Chemisty CH 332 (4WS)	Organic Chemistry CH 331 (4FW)	General chemistry CH 233 (4S) CH 2363 (1S)	General chemistry CH 232 (4WS) CH 262 (1W)	*General chemisty CH 231 (4FW)
Engineering Selection ² (3)	Biochemistry lab BB 494 (3W)	Biochemistry lab BB 493 (3F)	Biomedical Engr Principles BIOE 340 (3S)	General Biochemistry BB 451 (3WS)	General Biochemistry BB 450 (4FW)	*Matrix & Power series methods MTH 306 (4FWS)	*Applied Diff Equations MTH 256 (4FWS)	Perspective (3FWS)	*Vector Calculus MTH 254 (4FWS)	*Integral Calculus MTH 252 (4FWS)	*Differential Calculus MTH 251 (4FWS)
Spring	Winter	Fall	Spring	Winter	Pro School Fall	Spring	Winter	Fall	Spring	Winter	Fall
edits)	Fourth Year (48 credits)	Fou	credits)	Third Year (47 cre	Thi	edits)	Second Year (51 credits)	Seco	dits)	First Year (46 credits)	Fire

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* Required for admission into the Bioengineering Professional Program. We'll accept the combination of MTH 253 and MTH 341 as equivalent to MTH 306. CBEE 211 and CBEE 212 are enforced prerequisites for CHE 311 and CHE 331. CBEE 212 are enforced prerequisites for CHE 311 and CHE 331. BIOENGINEERING Numbers in parenthesis are credit hours per class. Blue-highlighted courses are pre-engineering core

^ Satisfies the WIC requirement BIOE-DPD must be taken with A/F grading. Only Perspective, Synthesis, HHS 231/24*, PAC and FREE can be taken with S/U grading. to determine time at UCC and OSU

Biology courses from which students may select (one course only)

Anatomy and Physiology Laboratory (BI 241, Fall) 2 credits of Introductory Microbiology (MB 230, FWS) 4 credits

Solar Technologies (CHE 451) 3 credits Engineering courses from which students may select (at least 9 credits).

Chemical thermodynamics (CHE 312) 3 credits

Polymer engineering and science (CHE 445) 4 credits

Chemical Process Dynamics and Simulation (CHE 361) 3 credits

Process control (CHE 461) 3 credits

Conventional & Alternative Energy Systems (CHE 450) 3 credits

Dynamics (ENGR 212) 3 credits

Strengths of materials (ENGR 213) 3 credits

Engineering graphics and 3-D modeling (ENGR 248) 3 credits

Surface Analysis (BIOE 4XX) 3 credits (number can vary) Bioenergy Systems (BEE 499 or 475) 3 credits

Biological Networks (CS 446) 3 credits

Cell Engineering (BIOE 459) 3 credits Bioseparations (BIOE 462) 3 credits

Bioremediation (BEE 468) 3 credits

Biosystems Analysis & Modeling (BEE 320) 4 credits

Air pollution control (ENVE 425) 3 credits

Environmental engineering design (ENVE 422) 4 credits Water and wastewater characterization (ENVE 421) 4 credits Fundamentals of environmental engineering (ENVE 322) 4 credits

Chemical Engineering Lab II (CBEE 416) 3 credits

Cell Engineering (BIOE 459) 3 credits

Fate/transport of organic chemicals in environmental systems (ENVE 431) 3 credits

Bioproduct Engineering (BEE 480) 3 credits Bioconjugation (BIOE 4XX) 3 credits (number can vary)

Transport Phenomena Laboratory (CHE 334) 2 credits

engineering science selection above. Upper division BIOE courses from which students may select (at least 6 credits). Note that courses used to satisfy this requirement CANNOT be used to satisfy the

Biological Networks (CS 446) 3 credits Bioconjugation or Surface Analysis (BIOE 499) (number can vary)

See next page/reverse for BIOE-DPD approved courses (must be taken with A/F grading)