Western S Engineering

Green Process Engineering

September 2018 (students who entered *first year* in September 2016 or earlier)

<u>Year 2:</u>			
Term A		NOTES:	
AM 2270a	Applied Math for Engineering II		
GPE 2213a	Green Chemistry I		
CBE 2214a	Engineering Thermodynamics		
CBE 2220a	Chemical Process Calculations		
CBE 2290a	Fundamental of Biochemical and Environmental Engineering		
ES 2211F	Engineering Communications		
Term B			
AM 2277b	Applied Math Chemical and Civil Engineering III		
GPE 2214b	Green Chemistry II		
CBE 2221b	Fluid Flow		
CBE 2224b	Chemical Engineering Thermodynamics		
CBE 2291b	Computational Methods for Engineers	Important:	
ECE 2238b	Introduction to Electrical Engineering	Students are respon	sible for ensuring they have the correct courses gree. If you are unsure which courses you still
Year 3:		need or if you see co	ourses listed on the progression sheet that are no
Term A		-	e not offered in the term you see listed here, Academic Counsellor.
GPE 3315a	Reaction Engineering with Green Engineering Applications	please contact your	Academic Coursenor.
GPE 3384a	Sustainable Energy, Solar and Fuel Cells	Non-technical E	lectives
GPE 3382a	Fundamentals of Green Process Engineering and Safety		d non-technical electives, please visit:
GPE 3395y	Green Process Engineering Laboratory Course		o.ca/undergraduate/upper_year/electives.html
, CBE 3318a	Introduction to Chemical Process Simulation		
-	Introduction to Chemical Process Simulation Heat Transfer Operations	Technical Electiv	ves List:
CBE 3318a			ves List: tives may not be offered in a given academic year.
CBE 3318a CBE 3322a		Some technical elect	
CBE 3318a CBE 3322a Term B	Heat Transfer Operations	Some technical elect Consult the Departm	tives may not be offered in a given academic year. nent or academic calendar for accurate listing.
CBE 3318a CBE 3322a Term B GPE 3386b	Heat Transfer Operations Sustainable Engineering Life Cycle Analysis and Case Studies Green Process Engineering Laboratory Course	Some technical elect Consult the Departm CBE 3325a/b	tives may not be offered in a given academic year. nent or academic calendar for accurate listing. Particulate Operations
CBE 3318a CBE 3322a Term B GPE 3386b GPE 3395y	Heat Transfer Operations Sustainable Engineering Life Cycle Analysis and Case Studies Green Process Engineering Laboratory Course Process Dynamics & Control	Some technical elect Consult the Departm CBE 3325a/b CBE 3330a/b	tives may not be offered in a given academic year. nent or academic calendar for accurate listing. Particulate Operations Bioreaction and Bioprocess Engineering
CBE 3318a CBE 3322a Term B GPE 3386b GPE 3395y CBE 3310b	Heat Transfer Operations Sustainable Engineering Life Cycle Analysis and Case Studies Green Process Engineering Laboratory Course Process Dynamics & Control Staged Operations	Some technical elect Consult the Departm CBE 3325a/b	tives may not be offered in a given academic year. nent or academic calendar for accurate listing. Particulate Operations Bioreaction and Bioprocess Engineering Downstream Processing in
CBE 3318a CBE 3322a Term B GPE 3386b GPE 3395y CBE 3310b CBE 3323b	Heat Transfer Operations Sustainable Engineering Life Cycle Analysis and Case Studies Green Process Engineering Laboratory Course Process Dynamics & Control Staged Operations Mass Transfer Operations	Some technical elect Consult the Departm CBE 3325a/b CBE 3330a/b CBE 4404a/b	tives may not be offered in a given academic year. nent or academic calendar for accurate listing. Particulate Operations Bioreaction and Bioprocess Engineering Downstream Processing in Pharmaceutical Manufacturing
CBE 3318a CBE 3322a Term B GPE 3386b GPE 3395y CBE 3310b CBE 3323b CBE 3324b SS 2143b	Heat Transfer Operations Sustainable Engineering Life Cycle Analysis and Case Studies Green Process Engineering Laboratory Course Process Dynamics & Control Staged Operations Mass Transfer Operations Applied Statistics and Data Analysis	Some technical elect Consult the Departm CBE 3325a/b CBE 3330a/b CBE 4404a/b CBE 4407a/b	tives may not be offered in a given academic year. nent or academic calendar for accurate listing. Particulate Operations Bioreaction and Bioprocess Engineering Downstream Processing in Pharmaceutical Manufacturing Solid Waste Treatment
CBE 3318a CBE 3322a Term B GPE 3386b GPE 3395y CBE 3310b CBE 3323b CBE 3324b	Heat Transfer Operations Sustainable Engineering Life Cycle Analysis and Case Studies Green Process Engineering Laboratory Course Process Dynamics & Control Staged Operations Mass Transfer Operations Applied Statistics and Data Analysis	Some technical elect Consult the Departm CBE 3325a/b CBE 3330a/b CBE 4404a/b CBE 4407a/b CBE 4409a/b	tives may not be offered in a given academic year. nent or academic calendar for accurate listing. Particulate Operations Bioreaction and Bioprocess Engineering Downstream Processing in Pharmaceutical Manufacturing Solid Waste Treatment Wastewater Treatment
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CBE 3318a CBE 3322a Term B GPE 3386b GPE 3395y CBE 3310b CBE 3323b CBE 3324b SS 2143b 0.5 Technica <u>Year 4:</u> Term A	Heat Transfer Operations Sustainable Engineering Life Cycle Analysis and Case Studies Green Process Engineering Laboratory Course Process Dynamics & Control Staged Operations Mass Transfer Operations Applied Statistics and Data Analysis al Elective	Some technical elect Consult the Departm CBE 3325a/b CBE 3330a/b CBE 4404a/b CBE 4407a/b CBE 4409a/b CBE 4417a/b	tives may not be offered in a given academic year. nent or academic calendar for accurate listing. Particulate Operations Bioreaction and Bioprocess Engineering Downstream Processing in Pharmaceutical Manufacturing Solid Waste Treatment Wastewater Treatment Catalytic Processes Industrial Multiphase Reactor Design
CBE 3318a CBE 3322a Term B GPE 3386b GPE 3395y CBE 3310b CBE 3323b CBE 3324b SS 2143b 0.5 Technica <u>Year 4:</u> Term A Bus 2299E	Heat Transfer Operations Sustainable Engineering Life Cycle Analysis and Case Studies Green Process Engineering Laboratory Course Process Dynamics & Control Staged Operations Mass Transfer Operations Applied Statistics and Data Analysis al Elective Business for Engineers	Some technical elect Consult the Departm CBE 3325a/b CBE 3330a/b CBE 4404a/b CBE 4407a/b CBE 4407a/b CBE 4409a/b CBE 4417a/b CBE 4418a/b CBE 4420a/b	tives may not be offered in a given academic year. nent or academic calendar for accurate listing. Particulate Operations Bioreaction and Bioprocess Engineering Downstream Processing in Pharmaceutical Manufacturing Solid Waste Treatment Wastewater Treatment Catalytic Processes Industrial Multiphase Reactor Design Computer Process Control
CBE 3318a CBE 3322a Term B GPE 3386b GPE 3395y CBE 3310b CBE 3323b CBE 3324b SS 2143b 0.5 Technica Year 4: Term A Bus 2299E GPE 4497	Heat Transfer Operations Sustainable Engineering Life Cycle Analysis and Case Studies Green Process Engineering Laboratory Course Process Dynamics & Control Staged Operations Mass Transfer Operations Applied Statistics and Data Analysis al Elective Business for Engineers Green Process Design	Some technical elect Consult the Departm CBE 3325a/b CBE 3330a/b CBE 4404a/b CBE 4407a/b CBE 4409a/b CBE 4409a/b CBE 4417a/b CBE 4418a/b CBE 4420a/b CBE 4421a/b	tives may not be offered in a given academic year. nent or academic calendar for accurate listing. Particulate Operations Bioreaction and Bioprocess Engineering Downstream Processing in Pharmaceutical Manufacturing Solid Waste Treatment Wastewater Treatment Catalytic Processes Industrial Multiphase Reactor Design Computer Process Control Introduction to Biomaterials Engineering
CBE 3318a CBE 3322a Term B GPE 3386b GPE 3395y CBE 3310b CBE 3323b CBE 3324b SS 2143b 0.5 Technica Year 4: Term A Bus 2299E GPE 4497 GPE 4484a	Heat Transfer Operations Sustainable Engineering Life Cycle Analysis and Case Studies Green Process Engineering Laboratory Course Process Dynamics & Control Staged Operations Mass Transfer Operations Applied Statistics and Data Analysis al Elective Business for Engineers Green Process Design Green Fuels and Chemicals	Some technical elect Consult the Departm CBE 3325a/b CBE 3330a/b CBE 4404a/b CBE 4407a/b CBE 4409a/b CBE 4417a/b CBE 4417a/b CBE 4418a/b CBE 4420a/b CBE 4421a/b CBE 4422a/b	tives may not be offered in a given academic year. nent or academic calendar for accurate listing. Particulate Operations Bioreaction and Bioprocess Engineering Downstream Processing in Pharmaceutical Manufacturing Solid Waste Treatment Wastewater Treatment Catalytic Processes Industrial Multiphase Reactor Design Computer Process Control Introduction to Biomaterials Engineering Nanobiotechnology
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CBE 3318a CBE 3322a Term B GPE 3386b GPE 3395y CBE 3310b CBE 3323b CBE 3324b SS 2143b 0.5 Technica Year 4: Term A Bus 2299E GPE 4497 GPE 4484a GPE 4415* 0.5 Non-tec	Heat Transfer Operations Sustainable Engineering Life Cycle Analysis and Case Studies Green Process Engineering Laboratory Course Process Dynamics & Control Staged Operations Mass Transfer Operations Applied Statistics and Data Analysis al Elective Business for Engineers Green Process Design Green Fuels and Chemicals Green Process Engineering Project hnical elective taken from the approved list (either term)	Some technical elect Consult the Departm CBE 3325a/b CBE 3330a/b CBE 4404a/b CBE 4407a/b CBE 4409a/b CBE 4409a/b CBE 4417a/b CBE 4420a/b CBE 4420a/b CBE 4422a/b CBE 4422a/b CBE 4422a/b CBE 4422a/b CBE 4422a/b CBE 4422a/b CBE 4432a/b CBE 4463a/b	tives may not be offered in a given academic year. nent or academic calendar for accurate listing. Particulate Operations Bioreaction and Bioprocess Engineering Downstream Processing in Pharmaceutical Manufacturing Solid Waste Treatment Wastewater Treatment Catalytic Processes Industrial Multiphase Reactor Design Computer Process Control Introduction to Biomaterials Engineering Nanobiotechnology Tissue Engineering Biosensor Principles and Applications Energy and Fuels Production Systems Water Pollution Design
CBE 3318a CBE 3322a Term B GPE 3386b GPE 3395y CBE 3310b CBE 3323b CBE 3324b SS 2143b 0.5 Technica Year 4: Term A Bus 2299E GPE 4497 GPE 4484a GPE 4415*	Heat Transfer Operations Sustainable Engineering Life Cycle Analysis and Case Studies Green Process Engineering Laboratory Course Process Dynamics & Control Staged Operations Mass Transfer Operations Applied Statistics and Data Analysis al Elective Business for Engineers Green Process Design Green Fuels and Chemicals Green Process Engineering Project	Some technical elect Consult the Departm CBE 3325a/b CBE 3330a/b CBE 4404a/b CBE 4407a/b CBE 4409a/b CBE 4409a/b CBE 4417a/b CBE 4418a/b CBE 4420a/b CBE 4420a/b CBE 4422a/b CBE 4422a/b CBE 4422a/b CBE 4422a/b CBE 4432a/b CBE 4463a/b CBE 4485a/b	tives may not be offered in a given academic year. nent or academic calendar for accurate listing. Particulate Operations Bioreaction and Bioprocess Engineering Downstream Processing in Pharmaceutical Manufacturing Solid Waste Treatment Wastewater Treatment Catalytic Processes Industrial Multiphase Reactor Design Computer Process Control Introduction to Biomaterials Engineering Nanobiotechnology Tissue Engineering Biosensor Principles and Applications Energy and Fuels Production Systems Water Pollution Design Energy and Society
CBE 3318a CBE 3322a Term B GPE 3386b GPE 3395y CBE 3310b CBE 3323b CBE 3324b SS 2143b 0.5 Technica <u>Year 4:</u> Term A Bus 2299E GPE 4497 GPE 4484a GPE 4415* 0.5 Non-tect One of:	Heat Transfer Operations Sustainable Engineering Life Cycle Analysis and Case Studies Green Process Engineering Laboratory Course Process Dynamics & Control Staged Operations Mass Transfer Operations Applied Statistics and Data Analysis al Elective Business for Engineers Green Process Design Green Fuels and Chemicals Green Process Engineering Project hnical elective taken from the approved list (either term)	Some technical elect Consult the Departm CBE 3325a/b CBE 3330a/b CBE 4404a/b CBE 4407a/b CBE 4409a/b CBE 4409a/b CBE 4417a/b CBE 4417a/b CBE 4418a/b CBE 4420a/b CBE 4422a/b CBE 4422a/b CBE 4422a/b CBE 4422a/b CBE 4422a/b CBE 4432a/b CBE 4463a/b CBE 4493a/b	tives may not be offered in a given academic year. nent or academic calendar for accurate listing. Particulate Operations Bioreaction and Bioprocess Engineering Downstream Processing in Pharmaceutical Manufacturing Solid Waste Treatment Wastewater Treatment Catalytic Processes Industrial Multiphase Reactor Design Computer Process Control Introduction to Biomaterials Engineering Nanobiotechnology Tissue Engineering Biosensor Principles and Applications Energy and Fuels Production Systems Water Pollution Design Energy and Society Polymer Engineering
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CBE 3318a CBE 3322a Term B GPE 3386b GPE 3395y CBE 3310b CBE 3323b CBE 3324b SS 2143b 0.5 Technica Year 4: Term A Bus 2299E GPE 4497 GPE 4484a GPE 4415* 0.5 Non-tech One of: Term B Bus 2299E	Heat Transfer Operations Sustainable Engineering Life Cycle Analysis and Case Studies Green Process Engineering Laboratory Course Process Dynamics & Control Staged Operations Mass Transfer Operations Applied Statistics and Data Analysis al Elective Business for Engineers Green Process Design Green Fuels and Chemicals Green Process Engineering Project hnical elective taken from the approved list (either term) CBE 4407a/b, CBE 4409a/b, CEE 4405a/b Business for Engineers	Some technical elect Consult the Departm CBE 3325a/b CBE 3330a/b CBE 4404a/b CBE 4407a/b CBE 4409a/b CBE 4417a/b CBE 4417a/b CBE 4417a/b CBE 4412a/b CBE 4420a/b CBE 4422a/b CBE 4422a/b CBE 4422a/b CBE 4422a/b CBE 4432a/b CBE 4432a/b CBE 4493a/b CBE 4493a/b CEE 3362a/b CEE 4405a/b MME 4429a/b	tives may not be offered in a given academic year. nent or academic calendar for accurate listing. Particulate Operations Bioreaction and Bioprocess Engineering Downstream Processing in Pharmaceutical Manufacturing Solid Waste Treatment Wastewater Treatment Catalytic Processes Industrial Multiphase Reactor Design Computer Process Control Introduction to Biomaterials Engineering Nanobiotechnology Tissue Engineering Biosensor Principles and Applications Energy and Fuels Production Systems Water Pollution Design Energy and Society Polymer Engineering Drinking Water Quality and Treatment Air Pollution