

Program

1. Master of Engineering Program

Prerequisite courses

The following courses are required prerequisites. If a student does not have evidence on their undergraduate transcript that they have received credit for these courses they must take them as part of the master degree curriculum.

- 506401 Cell and Molecular Biology for Bioengineering 3(3-0-6)
- 506402 Physiology for Bioengineering 3(3-0-6)
- 506403 Organic Chemistry and Biochemistry for Bioengineering 3(3-0-6)

1.1 Credits = 36 credits

1.2 Course structure

1.2.1 Plan A1

Total credits for the program	36	Credits
1) Foundation subjects	(non-credit)	Credits
2) Thesis	36	Credits

1.2.2 Plan A2

Total credits for the program	36	Credits
1) Foundation subjects	9	Credits
- Basic subjects	(non-credit)	Credits
- Required subject	9	Credits
2) Supporting subjects	15	Credits
3) Thesis	12	Credits

1.3 Subjects

1. Basic subjects (Non-credit)		Credits (Lecture- Practical - Self-Study)
506591	Research Methods	1(1-0-2)
Note	All students must attend a seminar organized by the Faculty of Engineering	
2. required subject		
506511	Bioengineering and Applications	3(3-0-6)
506512	System Bioengineering	3(3-0-6)
506513	Bioeconomics and Entrepreneurship in Biotechnology	3(3-0-6)
3. elective subject		
Choose any course at least 15 credits for Plan A (2) Choose from any of the subjects. Under the guidance of a supervisor or advisor		
Biomaterials Engineering		
506621	Biomaterials Engineering	3(3-0-6)
506622	Design and Applications of Biomaterials	3(3-0-6)
506623	Characterization of Biomaterials	3(3-0-6)
506624	Polymeric Biomaterials	3(3-0-6)
506625	Advanced Bioceramics	3(3-0-6)
506626	Advanced Surface Engineering	3(3-0-6)
506628	Special Topics in Biomaterials Engineering I	3(3-0-6)
506629	Special Topics in Biomaterials Engineering II	3(3-0-6)
Biomedical Engineering		
506631	Modelling in Biomedical Engineering	3(3-0-6)
506632	Biomedical Instrumentation	3(3-0-6)
506633	Metabolic System and Regulation	3(3-0-6)
506634	Design of Medical Devices and Implants	3(3-0-6)
506635	Rehabilitation Engineering and Assistive Technology	3(3-0-6)
506638	Special Topics in Biomedical Engineering I	3(3-0-6)

506639	Special Topics in Biomedical Engineering II	3(3-0-6)
Bioprocess Engineering		
506641	Biochemical Engineering	3(3-0-6)
506642	Bioseparation Engineering	3(3-0-6)
506643	Metabolic Engineering	3(3-0-6)
506644	Biological System Modelling and Controls	3(3-0-6)
506645	Biotransport Phenomena	3(3-0-6)
506646	Biological Reaction Engineering and Bioreactor Design	3(3-0-6)
506647	Enzymatic Engineering	3(3-0-6)
506648	Special Topics in Bioprocess Engineering I	3(3-0-6)
506649	Special Topics in Bioprocess Engineering II	3(3-0-6)
Bioelectronics, Bioimaging and Bioinformatics		
506651	Advanced Mathematics for Bioengineering	3(3-0-6)
506652	Algorithms for Functional Genomics	3(3-0-6)
506653	Computational Biology and Bioinformatics	3(3-0-6)
506654	Machine Learning	3(3-0-6)
506655	Signals and Systems	3(3-0-6)
506656	Statistical Signal Processing in Biomedical Engineering	3(3-0-6)
506657	Digital Image Processing	3(3-0-6)
506658	Special Topics in Bioelectronics, Bioimaging and Bioinformatics I	3(3-0-6)
506659	Special Topics in Bioelectronics, Bioimaging and Bioinformatics II	3(3-0-6)
Biopharmaceutical Engineering		
506661	Pharmaceutical Process Design	3(3-0-6)
506662	Pharmaceutical Kinetics, Thermodynamics and Transport Processes	3(3-0-6)
506663	Pharmaceutical Materials and Pharmaceutical Organic Nanotechnology	3(3-0-6)
506664	Nanotechnology-based Drug Design and Delivery	3(3-0-6)

506665	Structure and Function of Drugs	3(3-0-6)
506666	Chemical Tools for Assessing Biological Function	3(3-0-6)
506668	Special Topics in Biopharmaceutical Engineering I	3(3-0-6)
506669	Special Topics in Biopharmaceutical Engineering II	3(3-0-6)
Stem Cell and Biomolecular Engineering		
506671	Molecular and Genetic Engineering	3(3-0-6)
506672	Protein Engineering	3(3-0-6)
506673	Cell and Protein Interaction	3(3-0-6)
506674	Tissue Engineering and Stem Cell Processing	3(3-0-6)
506675	Tissue, Cellular and Molecular Basis of Disease	3(3-0-6)
506676	Stem Cells in Organogenesis, Carcinogenesis and Atherogenesis	3(3-0-6)
506678	Special Topics in Stem Cell and Biomolecular Engineering I	3(3-0-6)
506679	Special Topics in Stem Cell and Biomolecular Engineering II	3(3-0-6)
If necessary, students can choose courses from other institutions. Not more than three credits of electives with the approval of the Faculty of Engineering		
4. Thesis		
506697	Thesis	36(0-0-108)
506699	Thesis	12(0-0-36)

1.4 Education programs. Master of Engineering Program

Plan A1

The first semester		
506591	Research Methods	Non-credit
506697	Thesis	9(0-0-27)
Credits		<u>9</u>
The first semester		
506697	Thesis	9(0-0-27)
Credits		<u>9</u>

The second semester		
506697	Thesis	9(0-0-27)
		Credits 9
The second semester		
506697	<input type="checkbox"/> Thesis	9(0-0-27)
		Credits 9
		Total 36 credits

Plan A2

The first semester		
506591	Research Methods	Non-credit
506511	Bioengineering and Applications	3(3-0-6)
506512	System Bioengineering	3(3-0-6)
506513	Bioeconomics and Entrepreneurship in Biotechnology	3(3-0-6)
		Credits 9
The first semester		
506xxx	Elective Course I	3(3-0-6)
506xxx	Elective Course II	3(3-0-6)
506xxx	Elective Course III	3(3-0-6)
		Credits 9
The second semester		
506699	Thesis	6(0-0-18)
506xxx	Elective Course IV	3(3-0-6)
		Credits 9
The second semester		
506699	Thesis	6(0-0-18)
506xxx	Elective Course V	3(3-0-6)
		Credits 9
		Total 36 credits