Degree program – Biosystems Engineering

Degree Title

On successful completion of the degree program the students will be awarded ‘Bachelor of Science Honours in Biosystems Engineering (abbreviated B.Sc. (Hons) in Biosystems Eng.) by Sri Lanka Technological Campus (SLTC).

Duration

The degree program is conducted as a full-time program, over four-year duration.

Qualification Level

The qualification acquired by the graduands complies with the Level 6, SLQL 6, in the Sri Lanka Qualifications Framework*.

*Sri Lanka Qualifications framework, Ministry of Higher Education, June 2012

Credit Requirement

<table>
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<tr>
<th>Taught courses</th>
<th>GPA</th>
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<tr>
<td>Capstone Project</td>
<td>GPA</td>
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<td>Total courses with GPA</td>
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<tr>
<td>Taught courses</td>
<td>Non-GPA</td>
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<td>Industrial Training</td>
<td>Non-GPA</td>
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<td>Total NGPA courses</td>
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Total Credit Requirement GPA & Non-GPA 150
Curriculum

Students are given three minor specialization options

- Food and Bioprocess Technology
- Agricultural Technology
- Environmental Technology

Semester 1

BS 1201 Introduction to Biosystems 2(2-0)
BS 1203 Soil Science 2(2-0)
BS 1302 Biology 3(3-0)
BS 1304 General Chemistry 3(2-1)
CE 1301 Engineering Drawing 3(1-2)
IS 1201 English Communication Skills I 2(2-0)
IS 1302 Foundation Mathematics 3(3-0)
ME 1301 Mechanics 3(2-1)

Semester 2

BS 2301 Organic Chemistry 3(2-1)
BS 2202 Plant Physiology 2(2-0)
IS 2301 Single Variable Calculus 3(2-1)
IS 2202 English Communication Skills II 2(2-0)
ME 2301 Introduction to Computers and Programming 3(1-2)
BS 2203 Animal Physiology 2(2-0)
ME 2302 Material Science 3(2-1)

Semester 3

BS 3201 Fluid Mechanics 1 2 (2-0)
BS 3302 Analytical Chemistry 3(2-1)
BS 3303 Microbiology 3(2-1)
IS 3301 Multi Variable Calculus3(2-1)
IS 3302 Linear Algebra 3(2-1)
ME 3301 Thermodynamics 3(2-1)
ME 3302 Electrical and Electronics circuits 3(2-1)
Semester 4
BS4301 Fluid Mechanics II 3(2-1)
ME 4301 Engineering Mechanics 3(2-1)
BS 4202 Biostatistics 3(3-0)
CE 4201 Applied Mathematics Laboratory 2(1-1)
BS 4203 Heat and Mass Transfer 2(2-0)
BS 4204 Biotechnology 2(2-0)

Specialization Option I – Food and Bioprocess Technology
BS 4304 Food Chemistry 3(2-1)
BS 4305 Unit Operations in Food and Bioprocessing I 3(2-1)

Specialization Option II – Environmental Technology
CE 4313 Hydrology 3(3-0)
BS 4308 Environmental Science 3(2-1)

Specialization Option III – Agricultural Technology
BS 4309 Animal and Crop Production Science 3(2-1)
CE 4307 Hydrology 3(3-0)

Semester 5
IS 5201 Technical Writing 2 (1-0)
BS 5301 Water Quality and Waste Management 3(2-1)
BS 5302 Biosystems Engineering Design I 3(2-1)

Specialization Option I – Food and Bioprocess Technology
BS 5303 Unit Operations In Food and Bioprocess II 3(2-1)
BS 5304 Postharvest Technology 3(2-1)

Specialization Option II – Environmental Technology
BS5305 Eco Design Concepts 3(2-1)
BS5306 Environmental Law and Regulations 3(2-1)

Specialization Option III – Agricultural Technology
BS 5307 Farm Machinery Equipment 3(2-1)
BS 5308 Soil and Water Conservation 3(2-1)

Technical Elective 1
BS 5210 Climate Change 2(2-0)
CE 5201 Remote Sensing and GIS 2(2-0)
BS 5209 Occupational Health and Safety 2(2-0)
Non Technical Elective I – NGPA
IS 5211 Management Accounting 2(2-0)
IS 5212 Human Resource Management 2(2-0)
IS 5213 Financial Management 2(2-0)

Non Technical Elective II – NGPA
IS 5214 Principles of Innovation and Entrepreneurship 2(2-0)
IS 5215 Organizational Behavior and Management 2(2-0)
IS 5216 Consumer and Industrial Marketing 2(2-0)
IS B217 Marketing Communication 2(2-0)

Semester 6
BS 6301 Biosystems Engineering Design II 3(2-1)
BS 6302 Instrumentation and Measurement 3(2-1)

Specialization Option I- Food And Bioprocess Technology
BS 6303 Biochemical Reaction Technology 3(3-0)
BS 6304 Food Safety and Quality Assurance 3(2-1)
BS 6305 Food Processing Technology 3(2-1)
BS 6306 Industrial Microbiology 3(2-1)

Specialization Option II- Environmental Technology
BS 6307 Water Resource Management 3(2-1)
BS 6308 Sustainable Waste Recycling Processes 3(2-1)
BS 6309 Environmental Chemistry 3(2-1)
BS 6310 Pollution Prevention 3 (2-1)

Specialization Option III- Agricultural Technology
BS 6311 Greenhouse Management 3(2-1)
BS 6312 Irrigation water management
BS 6313 Farm Structures and Environmental Control 3(2-1)
BS 6314 Production Technology of Agricultural Machinery 3(3-0)

Technical Elective II-GPA
BS 6215 Nano Technology 2(2-0)
BS 6216 Pollution and Bioremediation 2(2-0)
BS 6217 Renewable Energy Technologies 2(2-0)

IT 6601 Industrial Training 6(0-6)
**Semester 7**

BS 7301 Bioenergy Systems 3(2-1)
BS 7202 Professional Practice and Ethics 2 (2-0)
BS 7303 Comprehensive Design Project 3(1-2)

*Specialization Option I – Food and Bioprocess Technology*
  - BS 7305 Bioseparation Technology 3(2-1)
  - BS 7304 Packaging Technology 3(2-1)

*Specialization Option II – Environmental Technology*
  - BS7306 Hazardous & Solid Wastes Management 3(2-1)
  - BS 7307 Sustainable Water Resources for Human Consumption 3(2-1)

*Specialization Option III – Agricultural Technology*
  - BS 7308 Innovations in Agricultural Technology and Engineering 3(2-1)
  - BS7309 Aquacultural Engineering Technology 3(0-3)

*Technical Elective III-GPA*
  - BS 7210 Life Cycle Analysis and Product Design 2(2-0)
  - BS 7211 Applications of Electric power and Electronics 2(2-0)
  - BS 7212 Ergonomics 2(2-0)

*Non Technical Elective III - (NGPA)*

**Option 1**
  - IS 7218 Business Law 2(2-0)
  - IS 7219 Rural Economic Development and Technology 2(2-0)

**Option 2**
  - IS 7220 Government & Politics of Sri Lanka 2(2-0)
  - IS 7221 Humanities 2(2-0)
  - IS 7222 Cinema and Television 2(2-0)
  - IS 7223 Introduction to Music Composition 2(2-0)
  - IS 7224 Introduction to Digital Arts 2(2-0)

**Semester 8**

BS 8801 Research Project 8(0-8)