

## MINIMUM CORE SUBJECT AREAS: BIOMEDICAL ENGINEERING

AREA	SUBJECTS / DESCRIPTION	RECOMMENDED CONTACT HOURS
<b>All areas below are considered core for Biomedical Engineering with recommended hours specified.</b>		
<b>1. Basic life science, human anatomy and physiology</b>	<ul style="list-style-type: none"> <li>- selected topics on human physiology and anatomy to understand structures and functions of major tissues and organs of human body. (The module is intended to set the foundation in a biological context to support the advanced topics in other modules.)</li> </ul>	60
<b>2. Bioscience, biochemistry and laboratory techniques / tests</b>	<ul style="list-style-type: none"> <li>- selected topics on cells, DNA, proteins, enzymes, and signaling molecules</li> <li>- laboratory sessions on selected topics. For example: cell culture, immunoassay and RT-PCR. (This module is intended to teach the most fundamental of life science and support the advanced topics in bio-compatibility, bio-signal, and medical instrumentation.)</li> </ul>	30
<b>3. Biomaterials, biomechanical engineering</b>	<ul style="list-style-type: none"> <li>- selected topics on development of biocompatibility, fundamentals, design and applications of biomaterials</li> <li>- selected topics on performance of medical implants</li> <li>- selected topics on the tissue mechanics, joints biomechanics, cellular mechanics, molecular mechanics, and prosthetics</li> </ul>	30
<b>4. Bioelectronics (circuits &amp; systems), bioinformatics</b>	<ul style="list-style-type: none"> <li>- selected topics on basic electronics, analog and digital circuits, bio-signal processing and programming</li> <li>- laboratory sessions or projects on circuit design and/or applications</li> <li>- selected topics on bio-informatics and information technology (The module is intended to set the foundation in electronics to support the advanced topics in medical device design and application.)</li> </ul>	30
<b>5. Medical instrumentation, biosensors and medical applications</b>	<ul style="list-style-type: none"> <li>- selected topics on medical devices for monitoring, diagnostic, and therapeutic purposes, principles of medical devices, bio-signals and bio-signal processing</li> </ul>	60
<b>6. Medical device and medical technology management, medical device regulation and harmonization</b>  <b>(This core area covers core subjects of 3 and 5)</b>	<ul style="list-style-type: none"> <li>- selected topics on medical device including in vitro diagnostics (IVD), design and manufacture, and life cycle management; medical device regulations in Hong Kong, EU, USA and Global Harmonization; medical device standards and safety requirements</li> <li>(This module is intended to teach students the practical knowledge in medical device industry and the government sector.)</li> </ul>	60
<b>7. Clinical engineering, medical imaging, rehabilitation engineering, tissue Engineering</b>	<ul style="list-style-type: none"> <li>- selected topics on medical device application, management and life-cycle in healthcare environment</li> <li>- selected topics on medical imaging technologies, safety and regulations in radiation</li> <li>- selected topics on rehabilitation engineering and tissue engineering</li> </ul>	60
<b>8. Professional ethics and engineer in society for biomedical engineering</b>	<ul style="list-style-type: none"> <li>- selected topics on medical ethics and roles of biomedical engineers, professionalism and social responsibilities of biomedical engineers</li> </ul>	30