# lgbio2110
*2021*

# Introduction to Clinical Engineering

**UCLouvain**

| 3.00 credits | 30.0 h | Q2 |
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| Teacher(s) | Delhaye Benoit ;Lefèvre Philippe ; |
| Language : | English |
| Place of the course | Louvain-la-Neuve |
| Prerequisites | Students need to master the common core skills described in the Civil Engineering Bachelor's programme |
| Main themes | LGBIO2110 presents the different aspects of engineering duties inside a hospital. This course focuses both on medical devices but also on the processes inside a hospital (patient admission, pre-operative screening '). This course covers a broad range of topics in order to represent the diversity of tasks performed by engineers inside a hospital. |
| Learning outcomes | **At the end of this learning unit, the student is able to :** |
| | 1   Regarding the learning outcomes of the programme of "Master in Biomedical Engineering", this course contributes to the development and the acquisition of the following skills :<br><br>• AA1.1, AA1.2, AA1.3<br>• AA3.1, AA3.2<br>• AA4.1<br>• AA5.2, AA5.3, AA5.6<br>• AA6.1, AA6.3<br><br>a. <u>Domain-related learning outcomes</u><br>At the end of this course, students will be able to:<br><br>• Understand the importance of risk analysis in the clinical settings and for medical devices<br>• Explain the different techniques to identify the risk and their respective strengths/weaknesses<br>• Assess the reliability of the clinical literature in the context of a health technology assessment, especially those linked to medical devices.<br>• Understand the factors governing health economics and simulating a model of health economics that takes into account the uncertainties of the parameters (e.g. MonteCarlo simulation)<br>• Compare the different techniques of quality management used in clinical settings<br>• Master the statistical tools linked to the Six Sigma technique (Control chart, statistical testing, confidence interval)<br>• Explain the importance of inventory and maintenance of medical devices in a clinical setting and how they influence risk and quality management<br><br>b. <u>Transversal learning outcomes</u><br>At the end of this course, students will be able to:<br><br>• Read a health technology assessment and present it to a clinical audience<br>• Perform Monte-Carlo simulations<br>• Apply risk analysis tools<br>• Apply quality management methods<br>• Perform a literature search to find scientific articles linked to a specific article |
| Evaluation methods | The final mark is obtained as follows:<br><br>• 30% is awarded based on the evuation of homeworks during the semester and the presentation of a scientific article linked to the course.<br>• 70% is awarded based on an individual exam during the session (written or oral with preparation). |
| Teaching methods | The course consists of different modules (risk analysis, health technology assessment, quality management and medical device management). |
| Inline resources | Moodle<br>https://moodleucl.uclouvain.be/course/search.php?search=LGBIO2110 |
| Bibliography | Plusieurs livres servent de base pour les différents modules. Une copie de ses livres est disponible sur demande auprès de l'enseignant. |

| Faculty or entity in charge | GBIO |
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| Programmes containing this learning unit (UE) | | | | |
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| Program title | Acronym | Credits | Prerequisite | Learning outcomes |
| Master [120] in Biomedical Engineering | GBIO2M | 3 | | 🔍 |