



6.00 credits

30.0 h + 14.0 h

Q2

|                             |  |
|-----------------------------|--|
| Teacher(s)                  | Froment Pascal ;   |
| Language :                  | French   |
| Place of the course         | Louvain-la-Neuve   |
| Prerequisites               | - Basic concepts of physics. Structure of matter.<br>- Radiation-matter interaction.   |
| Main themes                 | This course aims to introduce the basic concepts of radiation protection, including Belgian and European legislation. Practical applications of radioisotopes in industrial, medical and veterinary settings will be presented and analysed.   |
| Learning outcomes           | <p><b>At the end of this learning unit, the student is able to :</b></p> <p><b>a. Contribution of the teaching unit to the learning outcomes of the programme (PHYS2M)</b><br/>1.2, 1.3, 2.2, 2.5, 5.3, 9.1, 9.2, 9.3.</p> <p><b>b. Specific learning outcomes of the teaching unit</b></p> <p>1 At the end of this teaching unit, the student will be able to correctly manage the use of sources of ionizing radiation (radioactive sources and X-ray tubes) in a laboratory, a medical establishment or an industrial establishment.</p>  |
| Evaluation methods          | The evaluation consists of a written examination consisting of about ten questions followed directly by a discussion with the teacher.<br>Complementary questions make it possible to specify the answers given at the written exam  |
| Teaching methods            | Teaching activities will be provided by the holder of the teaching unit. The concrete examples are adapted to the questions and wishes of the students.  |
| Content                     | <p>All aspects of on-site radio management: production, packaging, transport, implementation and disposal for various applications.</p> <ol style="list-style-type: none"> <li>Reminder of fundamental principles of nuclear physics</li> <li>Production of artificial radioisotopes : nuclear reactor cyclotron</li> <li>Packaging and transport of radioisotopes: packages, packaging</li> <li>Establishment authorizations</li> <li>Design of a controlled area : armor calculation, rules of good practice in the zone</li> <li>Medical applications and industrial applications : industrial gauges, radiosterilization, gamma radiography, tracers, radiotherapy, nuclear medicine (each type of use is detailed and illustrated)</li> <li>Disposal of radioactive waste</li> </ol> <p>The teaching unit contains many current and concrete examples. These examples are chosen according to the orientation chosen by the students.</p> |
| Bibliography                | Des ouvrages en relation avec les disciplines seront présentés lors des cours.<br>Books related to the disciplines addressed will be presented during the theoretical lectures.  |
| Faculty or entity in charge | PHYS   |

| <b>Programmes containing this learning unit (UE)</b>                     |         |         |              |   |
|--|---------|---------|--------------|---|
| Program title  | Acronym | Credits | Prerequisite | Learning outcomes   |
| Certificat universitaire en physique d'hôpital                           | RPHY9CE | 6       |              |  |
| Certificat universitaire en radioprotection pour les médecins du travail | RMDT9CE | 3       |              |  |