

MODULE HANDBOOK

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| Course: | Biomaterials |
| Module Level: | Undergraduate |
| Code: | FIM302 |
| Sub-heading, if applicable: | - |
| Courses included in the module, if applicable: | - |
| Semester/term: | 5 th / Third Year |
| Module coordinator(s): | Drs Djoni,Izak Rudiyanto MSi |
| Lecturer(s): | Drs Djoni,Izak Rudiyanto MSi. and Dyah Hikmawati, SSi, M.Si. |
| Language: | Bahasa Indonesia |
| Classification within the curriculum | Compulsory Course / Elective Course |
| Teaching format / class hours per week during semester: | 3 hours of lectures (50 min / hour) |
| Workload: | 3 hours of lectures, 3 hours of structural activities, 3 hours of individual study, 13 weeks per semester, and total of 117 hours per semester ~ 3,9 ECTS* |
| Credit Points: | 3 |
| Requirement(s): | (FID 201) Modern Physics |
| Learning Goals/Competencies: | <p>General Competence (Knowledge): After following this course, the physics student are able to explain and analyze the characterization and physical properties of synthetic material (biomaterials), hard and soft tissues of human body.</p> <p>Specific Competence:</p> <ol style="list-style-type: none"> 1. Explain the classification of biomaterials (metals, polymers, ceramics and composites). 2. Explain biomaterial requirements for biomedical application 3. Describe the properties and application of biometal 4. Describe the properties and application of bioceramics 5. Describe the properties and application of biopolymers 6. Describe the properties and application of biocomposites |
| Contents: | Classification of biomaterials (metals, polymers, ceramics and composites), biomaterial requirements for biomedical applications (biocompatibility, non-carcinogenic, corrosion, toxicity, etc.), biometal (biometal implants and materials dental, mechanical properties), biopolymers (biopolymers implants and materials dental, physical properties), bioceramics (definition of bioceramics, type and properties of ceramics biomaterial implants), biocomposites (theory of composite fiber, polymer composites and hydroxyapatite), sterilization techniques (gamma radiation, sterilizing effect against its properties) |
| Soft Skill Attribute: | Effort and ethic |
| Study/Exam Achievements: | Students are considered competent and eligible to pass the course upon obtaining at least 40 of maximum mark of the exams (midterm and final exams), structured activity (group discussion). Final score is calculated as follow: 20% assignment + 20% Quiz + 30% midterm test + 30% final exam |

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| | <p>Final grade is defined as follow:</p> <p>A : 75 – 100</p> <p>AB : 70 - 74.99</p> <p>B : 65 - 69.99</p> <p>BC : 60 - 64.99</p> <p>C : 55 - 59.99</p> <p>D : 40 - 54.99</p> <p>E : 0 - 39.99</p> |
| Forms of Media: | Powerpoint slides, LCD projectors and whiteboards |
| Learning Methods: | Lecture, assessments and group discussion |
| Literature(s): | <ol style="list-style-type: none"> 1. JB. Park and RS Lakes, 1992, <i>Biomaterials-An Introduction</i>, 2nd Edition, Plenum Press, New York 2. J. Black, 1992, <i>Biological Performance of Materials</i>, 2nd Edition, Marcel & Dekker, New York 3. Richard Van Noort, 1994, <i>Dental Material</i>, John Wiley & Sons, New York |
| Notes: | <p>*Total ECTS = {(total hours workload × 50 min) / 25 hours</p> <p>Each ECTS is equals with 25 hours.</p> |