University of Bucharest Faculty of Physics Doctoral School of Physics Domain of doctoral studies: Physics

Syllabus 2024-2028

Direction of studies: Experimental and Computational Biophysics, Medical Physics

| Disciplines & Activities | Semes | ter I | Semes | ter II | Examination | |
|--|--------------|---------------|--------------|---------------|-------------|------|
| Advanced training program | Hours course | Hours seminar | Hours course | Hours seminar | type | ECTS |
| Theoretical and experimental physics I | 8 | | | | E | 6 |
| Fundamental physical processes I | 8 | | | | Е | 6 |
| Ethics and academic integrity * | 14 | | | | V | 3 |
| Theoretical and experimental physics II | | | 8 | | E | 6 |
| Fundamental physical processes II | | | 8 | | E | 6 |
| Methodology of scientific research and statistical | | | 4 | | C | 3 |
| data processing * | | | | | | |
| Total hours and ECTS | 30 | | 20 | | | 30 |

| Scientific research program | Sem. I | Sem. II | Sem. III | Sem. IV | Sem. V | Sem. VI | Sem. VII | Sem. VIII | Examination type | ECTS |
|--|-----------|------------|-------------|------------|-----------|------------|-------------|--------------|------------------|------|
| Scientific report 1 | X | | | | | | | | C | 6 |
| Research activity and scientific works preparation | X | | | | | | | | V | 4 |
| Scientific report 2 | | X | | | | | | | C | 6 |
| Research activity and scientific works preparation | | X | | | | | | | V | 4 |
| Research project | | X | | | | | | | V | 10 |
| Research activity and scientific works preparation | | | X | | | | | | V | 10 |
| Scientific research reports 1 | | | X | | | | | | С | 20 |
| Research activity and scientific works preparation | | | | X | | | | | V | 10 |
| Scientific research reports 2 | | | | X | | | | | С | 20 |
| Research activity and scientific works preparation | | | | | Х | | | | V | 10 |
| Scientific research reports 3 | | | | | Х | | | | С | 20 |
| Research activity and scientific works preparation | | | | | | X | | | V | 10 |
| Scientific research reports 4 | | | | | | X | | | C | 20 |
| Research activity and scientific works preparation | | | | | | | X | | V | 10 |
| Scientific research reports 5 | | | | | | | X | | С | 20 |
| Writing and editing the doctoral thesis | | | | | | | | X | V | 30 |
| Total ECTS | | | | | | | | | | 210 |
| Grand total ECTS | | · | | | | | | · | | 240 |

^{*} Common course for all directions of studies

Direction of studies: Condensed Matter Physics

| Disciplines & Activities | Semes | ter I | Semes | ter II | Examination | ECTS |
|--|--------------|---------------|--------------|---------------|-------------|------|
| Advanced training program | Hours course | Hours seminar | Hours course | Hours seminar | type | ECIS |
| Theoretical and experimental physics I | 8 | | | | Е | 6 |
| Fundamental physical processes I | 8 | | | | E | 6 |
| Ethics and academic integrity * | 14 | | | | V | 3 |
| Theoretical and experimental physics II | | | 8 | | E | 6 |
| Fundamental physical processes II | | | 8 | | E | 6 |
| Methodology of scientific research and statistical | | | 4 | | C | 3 |
| data processing * | | | | | | |
| Total hours and ECTS | 30 | | 20 | | | 30 |

| Scientific research program | Sem. I | Sem. II | Sem. III | Sem. IV | Sem. V | Sem. VI | Sem. VII | Sem. VIII | Examination type | ECTS |
|--|-----------|------------|-------------|------------|-----------|------------|-------------|--------------|------------------|------|
| Scientific report 1 | X | | | | | | | | C | 6 |
| Research activity and scientific works preparation | X | | | | | | | | V | 4 |
| Scientific report 2 | | X | | | | | | | C | 6 |
| Research activity and scientific works preparation | | X | | | | | | | V | 4 |
| Research project | | X | | | | | | | V | 10 |
| Research activity and scientific works preparation | | | X | | | | | | V | 10 |
| Scientific research reports 1 | | | X | | | | | | C | 20 |
| Research activity and scientific works preparation | | | | X | | | | | V | 10 |
| Scientific research reports 2 | | | | X | | | | | C | 20 |
| Research activity and scientific works preparation | | | | | X | | | | V | 10 |
| Scientific research reports 3 | | | | | X | | | | C | 20 |
| Research activity and scientific works preparation | | | | | | X | | | V | 10 |
| Scientific research reports 4 | | | | | | X | | | C | 20 |
| Research activity and scientific works preparation | | | | | | | X | | V | 10 |
| Scientific research reports 5 | | | | | | | X | | C | 20 |
| Writing and editing the doctoral thesis | | | | | | | | X | V | 30 |
| Total ECTS | | | | | | | | | | 210 |
| Grand total ECTS | · | | | | | | | | | 240 |

^{*} Common course for all directions of studies

Direction of studies: Atomic and Nuclear Physics, Elementary Particles, Astrophysics and Applications

| Disciplines & Activities | Semes | ster I | Semes | ster II | Examination | ECTS |
|--|--------------|---------------|--------------|---------------|-------------|------|
| Advanced training program | Hours course | Hours seminar | Hours course | Hours seminar | type | ECIS |
| Theoretical and experimental physics I | 8 | | | | Е | 6 |
| Fundamental physical processes I | 8 | | | | Е | 6 |
| Ethics and academic integrity * | 14 | | | | V | 3 |
| Theoretical and experimental physics II | | | 8 | | E | 6 |
| Fundamental physical processes II | | | 8 | | E | 6 |
| Methodology of scientific research and statistical | | | 4 | | С | 3 |
| data processing * | | | | | | |
| Total hours and ECTS | 30 | | 20 | | | 30 |

| Scientific research program | Sem. I | Sem. II | Sem. III | Sem. IV | Sem. V | Sem. VI | Sem. VII | Sem. VIII | Examination type | ECTS |
|--|-----------|------------|-------------|------------|-----------|------------|-------------|--------------|------------------|------|
| Scientific report 1 | X | | | | | | | | C | 6 |
| Research activity and scientific works preparation | X | | | | | | | | V | 4 |
| Scientific report 2 | | X | | | | | | | C | 6 |
| Research activity and scientific works preparation | | X | | | | | | | V | 4 |
| Research project | | X | | | | | | | V | 10 |
| Research activity and scientific works preparation | | | X | | | | | | V | 10 |
| Scientific research reports 1 | | | X | | | | | | С | 20 |
| Research activity and scientific works preparation | | | | X | | | | | V | 10 |
| Scientific research reports 2 | | | | X | | | | | С | 20 |
| Research activity and scientific works preparation | | | | | X | | | | V | 10 |
| Scientific research reports 3 | | | | | Х | | | | С | 20 |
| Research activity and scientific works preparation | | | | | | X | | | V | 10 |
| Scientific research reports 4 | | | | | | X | | | C | 20 |
| Research activity and scientific works preparation | | | | | | | X | | V | 10 |
| Scientific research reports 5 | | | | | | | X | | C | 20 |
| Writing and editing the doctoral thesis | | | | | | | | X | V | 30 |
| Total ECTS | | | | | | | | | | 210 |
| Grand total ECTS | | | | | | | | | | 240 |

^{*} Common course for all directions of studies

${\bf Direction\ of\ studies:}\ {\it Theoretical\ and\ Computational\ Physics}$

| Disciplines & Activities | Semes | ster I | Semes | ter II | Examination | ECTS |
|--|--------------|---------------|--------------|---------------|-------------|------|
| Advanced training program | Hours course | Hours seminar | Hours course | Hours seminar | type | ECIS |
| Theoretical and experimental physics I | 8 | | | | Е | 6 |
| Fundamental physical processes I | 8 | | | | Е | 6 |
| Ethics and academic integrity * | 14 | | | | V | 3 |
| Theoretical and experimental physics II | | | 8 | | E | 6 |
| Fundamental physical processes II | | | 8 | | E | 6 |
| Methodology of scientific research and statistical | | | 4 | | C | 3 |
| data processing * | | | | | | |
| Total hours and ECTS | 30 | | 20 | | | 30 |

| Scientific research program | Sem. I | Sem. II | Sem. III | Sem. IV | Sem. V | Sem. VI | Sem. VII | Sem. VIII | Examination type | ECTS |
|--|-----------|------------|-------------|------------|-----------|------------|-------------|--------------|------------------|------|
| Scientific report 1 | X | | | | | | | | C | 6 |
| Research activity and scientific works preparation | X | | | | | | | | V | 4 |
| Scientific report 2 | | X | | | | | | | C | 6 |
| Research activity and scientific works preparation | | X | | | | | | | V | 4 |
| Research project | | X | | | | | | | V | 10 |
| Research activity and scientific works preparation | | | X | | | | | | V | 10 |
| Scientific research reports 1 | | | X | | | | | | C | 20 |
| Research activity and scientific works preparation | | | | X | | | | | V | 10 |
| Scientific research reports 2 | | | | X | | | | | C | 20 |
| Research activity and scientific works preparation | | | | | X | | | | V | 10 |
| Scientific research reports 3 | | | | | X | | | | C | 20 |
| Research activity and scientific works preparation | | | | | | X | | | V | 10 |
| Scientific research reports 4 | | | | | | X | | | C | 20 |
| Research activity and scientific works preparation | | | | | | | X | | V | 10 |
| Scientific research reports 5 | | | | | | | X | | C | 20 |
| Writing and editing the doctoral thesis | | | | | | | | X | V | 30 |
| Total ECTS | | | | | | | | | | 210 |
| Grand total ECTS | | | | | | | | 240 | | |

^{*} Common course for all directions of studies

Direction of studies: Physics of Atmosphere and Earth – Renewable Energy Sources

| Disciplines & Activities | Semes | ster I | Semes | Examination | ECTS | |
|--|--------------|---------------|--------------|---------------|------|------|
| Advanced training program | Hours course | Hours seminar | Hours course | Hours seminar | type | ECIS |
| Theoretical and experimental physics I | 8 | | | | Е | 6 |
| Fundamental physical processes I | 8 | | | | Е | 6 |
| Ethics and academic integrity * | 14 | | | | V | 3 |
| Theoretical and experimental physics II | | | 8 | | E | 6 |
| Fundamental physical processes II | | | 8 | | E | 6 |
| Methodology of scientific research and statistical | | | 4 | | C | 3 |
| data processing * | | | | | | |
| Total hours and ECTS | 30 | | 20 | | | 30 |

| Scientific research program | Sem. I | Sem. II | Sem. III | Sem. IV | Sem. V | Sem. VI | Sem. VII | Sem. VIII | Examination type | ECTS |
|--|-----------|------------|-------------|------------|-----------|------------|-------------|--------------|------------------|------|
| Scientific report 1 | X | | | | | | | | C | 6 |
| Research activity and scientific works preparation | X | | | | | | | | V | 4 |
| Scientific report 2 | | X | | | | | | | C | 6 |
| Research activity and scientific works preparation | | X | | | | | | | V | 4 |
| Research project | | X | | | | | | | V | 10 |
| Research activity and scientific works preparation | | | X | | | | | | V | 10 |
| Scientific research reports 1 | | | X | | | | | | С | 20 |
| Research activity and scientific works preparation | | | | X | | | | | V | 10 |
| Scientific research reports 2 | | | | X | | | | | C | 20 |
| Research activity and scientific works preparation | | | | | X | | | | V | 10 |
| Scientific research reports 3 | | | | | X | | | | C | 20 |
| Research activity and scientific works preparation | | | | | | X | | | V | 10 |
| Scientific research reports 4 | | | | | | X | | | C | 20 |
| Research activity and scientific works preparation | | | | | | | X | | V | 10 |
| Scientific research reports 5 | | | | | | | X | | C | 20 |
| Writing and editing the doctoral thesis | | | | | | | | X | V | 30 |
| Total ECTS | | | | | | | | | | 210 |
| Grand total ECTS | • | • | | | • | • | | | | 240 |

^{*} Common course for all directions of studies

Direction of studies: Optics, Spectroscopy, Plasma, Lasers

| Disciplines & Activities | Semes | ster I | Semes | ster II | Examination | ECTS | |
|--|--------------|---------------|--------------|---------------|-------------|------|--|
| Advanced training program | Hours course | Hours seminar | Hours course | Hours seminar | type | ECIS | |
| Theoretical and experimental physics I | 8 | | | | Е | 6 | |
| Fundamental physical processes I | 8 | | | | Е | 6 | |
| Ethics and academic integrity * | 14 | | | | V | 3 | |
| Theoretical and experimental physics II | | | 8 | | Е | 6 | |
| Fundamental physical processes II | | | 8 | | Е | 6 | |
| Methodology of scientific research and statistical data processing * | | | 4 | | С | 3 | |
| Total hours and ECTS | 30 | | 20 | | | 30 | |

| Scientific research program | Sem. I | Sem. II | Sem. III | Sem. IV | Sem. V | Sem. VI | Sem. VII | Sem. VIII | Examination type | ECTS |
|--|-----------|------------|-------------|------------|-----------|------------|-------------|--------------|------------------|------|
| Scientific report 1 | X | | | | | | | | C | 6 |
| Research activity and scientific works preparation | X | | | | | | | | V | 4 |
| Scientific report 2 | | X | | | | | | | C | 6 |
| Research activity and scientific works preparation | | X | | | | | | | V | 4 |
| Research project | | X | | | | | | | V | 10 |
| Research activity and scientific works preparation | | | X | | | | | | V | 10 |
| Scientific research reports 1 | | | X | | | | | | С | 20 |
| Research activity and scientific works preparation | | | | X | | | | | V | 10 |
| Scientific research reports 2 | | | | X | | | | | С | 20 |
| Research activity and scientific works preparation | | | | | X | | | | V | 10 |
| Scientific research reports 3 | | | | | X | | | | С | 20 |
| Research activity and scientific works preparation | | | | | | X | | | V | 10 |
| Scientific research reports 4 | | | | | | X | | | С | 20 |
| Research activity and scientific works preparation | | | | | | | X | | V | 10 |
| Scientific research reports 5 | | | | | | | X | | С | 20 |
| Writing and editing the doctoral thesis | | | | | | | | X | V | 30 |
| Total ECTS | | | | | | | | | | 210 |
| Grand total ECTS | | | | | | | | | 240 | |

^{*} Common course for all directions of studies

Direction of studies: Educational Physics

| Disciplines & Activities | Semes | ster I | Semes | ter II | Examination | FOTO |
|--|--------------|---------------|----------------------------|--------|-------------|------|
| Advanced training program | Hours course | Hours seminar | Hours course Hours seminar | | type | ECTS |
| Theoretical and experimental physics I | 8 | | | | Е | 6 |
| Fundamental physical processes I | 8 | | | | E | 6 |
| Ethics and academic integrity * | 14 | | | | V | 3 |
| Theoretical and experimental physics II | | | 8 | | E | 6 |
| Fundamental physical processes II | | | 8 | | E | 6 |
| Methodology of scientific research and statistical | | | 4 | | C | 3 |
| data processing * | | | | | | |
| Total hours and ECTS | 30 | | 20 | | | 30 |

| Scientific research program | Sem. | Examination | ECTS |
|--|------|------|------|------|------|------|------|------|-------------|------|
| | 1 | II | III | IV | V | VI | VII | VIII | type | |
| Scientific report 1 | X | | | | | | | | C | 6 |
| Research activity and scientific works preparation | X | | | | | | | | V | 4 |
| Scientific report 2 | | X | | | | | | | C | 6 |
| Research activity and scientific works preparation | | X | | | | | | | V | 4 |
| Research project | | X | | | | | | | V | 10 |
| Research activity and scientific works preparation | | | X | | | | | | V | 10 |
| Scientific research reports 1 | | | X | | | | | | C | 20 |
| Research activity and scientific works preparation | | | | X | | | | | V | 10 |
| Scientific research reports 2 | | | | X | | | | | C | 20 |
| Research activity and scientific works preparation | | | | | X | | | | V | 10 |
| Scientific research reports 3 | | | | | X | | | | C | 20 |
| Research activity and scientific works preparation | | | | | | X | | | V | 10 |
| Scientific research reports 4 | | | | | | X | | | C | 20 |
| Research activity and scientific works preparation | | | | | | | X | | V | 10 |
| Scientific research reports 5 | | | | | | | X | | C | 20 |
| Writing and editing the doctoral thesis | | | | | | | | X | V | 30 |
| Total ECTS | | | | | | | | | | 210 |
| Grand total ECTS | | | | | | | | 240 | | |

^{*} Common course for all directions of studies

Dean, Prof.univ.dr. Lucian ION Director of Doctoral School, Prof.univ.dr. Daniela DRAGOMAN