



Faculty of: Physics and Applied Computer Science

Field of study: Technical Physics Study level: Second-cycle studies Form and type of study: Full-time studies

Annual: 2017/2018 Lecture language: Polish

| Code | Module name | Lectures | Auditorium classes | Laboratory classes | Project classes | Conversation seminar | Seminar classes | Practical classes | Fieldwork classes | Workshops | Others | E-learning | ECTS | E |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------|--------------------|--------------------|-----------------|----------------------|-----------------|-------------------|-------------------|-----------|--------|------------|------|-----|
| Semester 1 | | | | | | | | | | | | | | |
| Engineering | | | | | | | | | | | | | | |
| JFT-2-102-s | Modern Electronics | 30 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | No |
| JFT-2-103-s | Advanced data analysis | 15 | 0 | 30 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | Yes |
| Physics | | | | | | | | | | | | | | |
| JFT-2-101-s | Quantum Mechanics | 45 | 30 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 8 | Yes |
| Electives FT II.1 | | | | | | | | | | | | | 12 | |
| The rules for selecting groups/modules: Student wybiera przedmioty obieralne o łącznej liczbie ECTS nie mniejszej od 12, w tym przedmiot w całości prowadzony w języku obcym, za który może uzyskać co najmniej 3 ECTS. | | | | | | | | | | | | | | |
| Suma ECTS | | | | | | | | | | | | | 30 | |
| Semester 2 | | | | | | | | | | | | | | |
| Engineering | | | | | | | | | | | | | | |
| JFT-2-201-s | Seminar (Technical Physics) | 0 | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| Non-technical | | | | | | | | | | | | | | |
| JFT-2-203-s | Entrepreneurship | 30 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | No |
| Other Basic | | | | | | | | | | | | | | |
| JFT-2-202-s | Coordination and funding of scientific research | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | No |
| Physics | | | | | | | | | | | | | | |
| JFT-2-204-s | Thesis-oriented Internship | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |

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|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------|--------------------|-----------------|----------------------|-----------------|-------------------|-------------------|-----------|--------|------------|------|-----|
| Foreign language | | | | | | | | | | | | | 2 | |
| The rules for selecting groups/modules: Jeden przedmiot z grupy | | | | | | | | | | | | | | |
| JFT-2-205-s | Spanish B2+ course - compulsory course for students of SECOND-CYCLE STUDIES | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | Yes |
| JFT-2-206-s | Język angielski B2+ - obowiązkowy kurs języka specjalistycznego na studiach II stopnia dla studentów Wydziału Fizyki i Informatyki Stosowanej | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | Yes |
| JFT-2-208-s | Russian B2+ course - compulsory course for students of SECOND-CYCLE STUDIES | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | Yes |
| JFT-2-209-s | French B2+ course - compulsory course for students of SECOND-CYCLE STUDIES | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | Yes |
| JFT-2-210-s | Język niemiecki B2+ - obowiązkowy kurs języka specjalistycznego na studiach II stopnia dla studentów Wydziału Fizyki i Informatyki Stosowanej | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | Yes |
| Moduły obieralne FT2 - sem. 2 | | | | | | | | | | | | | 13 | |
| The rules for selecting groups/modules: Zasady wyboru grup/modułów: Student wybiera przedmioty obieralne o łącznej liczbie ECTS nie mniejszej od 13. | | | | | | | | | | | | | | |
| Suma ECTS | | | | | | | | | | | | | 30 | |
| Semester 3 | | | | | | | | | | | | | | |
| Thesis | | | | | | | | | | | | | | |
| JFT-2-301-s | Seminar (M.Sc. Thesis) | 0 | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 5 | No |
| JFT-2-303-s | Master's thesis | 0 | 0 | 0 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | Yes |
| Moduły obieralne FT2 - sem. 3 | | | | | | | | | | | | | 5 | |
| The rules for selecting groups/modules: Student wybiera przedmioty obieralne o łącznej liczbie ECTS nie mniejszej od 5. | | | | | | | | | | | | | | |
| Suma ECTS | | | | | | | | | | | | | 30 | |
| Semester 0 - Completion of modules in any semester | | | | | | | | | | | | | | |
| Engineering | | | | | | | | | | | | | | |
| JFT-2-007-s | Języki skryptowe - metodologia pracy | 15 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | No |
| JFT-2-008-s | Modelling of environmental processes | 15 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| JFT-2-009-s | Geochemistry | 30 | 15 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | Yes |
| JFT-2-024-s | Radiochemistry | 30 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | No |
| JFT-2-029-s | Data Acquisition Systems | 0 | 0 | 20 | 20 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 6 | No |
| JFT-2-031-s | Cryogenics | 30 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| JFT-2-032-s | User Interface | 30 | 0 | 15 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| JFT-2-034-s | Python in the enterprise | 15 | 0 | 18 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | No |
| JFT-2-035-s | Multicore programming | 15 | 0 | 18 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| JFT-2-039-s | Applications for Mobile Devices | 15 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| JFT-2-041-s | Nowoczesne metody pomiarowe | 30 | 0 | 45 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | No |
| JFT-2-045-s | Hardware Description Language | 20 | 0 | 22 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | No |
| JFT-2-048-s | Scientific Text Edition and Presentation | 15 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| JFT-2-052-s | VPython: 3D simulations of physical processes for everybody | 15 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | No |
| JFT-2-056-s | Trace Analysis | 15 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | No |
| JFT-2-057-s | Data Analysis | 20 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | No |
| JFT-2-058-s | Introduction to X-ray fluorescence analysis | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 4 | Yes |
| JFT-2-060-s | Microtomography | 22 | 0 | 15 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |

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|-------------|----------------------------------------------------------------|----------|--------------------|--------------------|-----------------|----------------------|-----------------|-------------------|-------------------|-----------|--------|------------|------|-----|
| IFT-2-063-s | Methodology of air quality measurements | 15 | 0 | 12 | 6 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 4 | No |
| IFT-2-068-s | Parallel and Distributed Systems | 30 | 0 | 26 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | Yes |
| IFT-2-069-s | Nanotechnologie i ich zastosowania w naukach przyrodniczych | 15 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | Yes |
| Mathematics | | | | | | | | | | | | | | |
| IFT-2-028-s | Wstęp do teorii gier | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | Yes |
| Other Basic | | | | | | | | | | | | | | |
| IFT-2-042-s | Photosynthesis | 30 | 0 | 20 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 5 | No |
| IFT-2-043-s | Photosynthesis (small course) | 22 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 3 | No |
| IFT-2-055-s | Podstawy obliczeń kwantowych | 30 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 5 | Yes |
| IFT-2-070-s | Fundamentals of Quantum Computer Science | 30 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| Physics | | | | | | | | | | | | | | |
| IFT-2-010-s | Promieniotwórczość w środowisku | 30 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | No |
| IFT-2-011-s | Solid State Structures and Symmetries | 30 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | Yes |
| IFT-2-012-s | Metody doświadczalne fizyki fazy skondensowanej | 30 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| IFT-2-013-s | Soft Matter Physics | 28 | 14 | 0 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 4 | Yes |
| IFT-2-014-s | Semiconductor Materials and Devices | 30 | 0 | 0 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| IFT-2-015-s | Physics of Disordered Matter | 30 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| IFT-2-016-s | Laboratorium fizyki fazy skondensowanej | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | No |
| IFT-2-017-s | Physics of Surface, Thin Films and Nanostructures | 30 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 4 | Yes |
| IFT-2-018-s | Metody analityczne w badaniach środowiska | 30 | 0 | 15 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 4 | Yes |
| IFT-2-019-s | Monitoring środowiska | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | Yes |
| IFT-2-020-s | Jądrowe metody pomiarowe | 30 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | Yes |
| IFT-2-021-s | Fizyka konwersji energii | 30 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| IFT-2-022-s | Globalne cykle biogeochemiczne | 25 | 0 | 0 | 8 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| IFT-2-023-s | Współczesne zastosowania promieniowania X | 30 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | Yes |
| IFT-2-025-s | Magnetism and Physics of Metals | 30 | 0 | 10 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 3 | Yes |
| IFT-2-030-s | Teoria grup a symetrie w fizyce | 30 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| IFT-2-038-s | Fizyka żeglowania | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | No |
| IFT-2-044-s | Introduction to data analysis in experimental particle physics | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | No |
| IFT-2-049-s | Introduction to quantum optics | 30 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| IFT-2-050-s | Scattering theory | 30 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | Yes |
| IFT-2-051-s | Introduction to atomic and molecular physics | 30 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | Yes |
| IFT-2-053-s | Fizyka powierzchni i cienkich warstw | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | No |
| IFT-2-054-s | Symetrie i struktury, ciało stałe i biomolekuły | 28 | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | Yes |
| IFT-2-059-s | Laboratory of advanced nuclear techniques | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | No |
| IFT-2-061-s | An introduction to quantum theory of electronic transport | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| IFT-2-062-s | Introduction to eddy covariance | 16 | 0 | 16 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 4 | Yes |
| IFT-2-064-s | Introduction to synchrotron radiation and its applications | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | No |
| IFT-2-065-s | Disperse modelling in physics of atmosphere | 4 | 12 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 2 | No |
| IFT-2-066-s | X-ray physics | 30 | 15 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | Yes |

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|-----------------------------------------|---------------------------------------------------------------------|----------|--------------------|--------------------|-----------------|----------------------|-----------------|-------------------|-------------------|-----------|--------|------------|------|-----|
| JFT-2-071-s | Methods of structural and diffractive analysis of aperiodic systems | 10 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | No |
| Elektronika i systemy detekcyjne | | | | | | | | | | | | | | |
| The rules for selecting groups/modules: | | | | | | | | | | | | | | |
| JFT-2-026-s | Nuclear Electronics | 45 | 15 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | Yes |
| JFT-2-027-s | Pozycjoczułe detektory cząstek jonizujących i promieniowania X | 15 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 3 | No |
| JFT-2-036-s | Design of CMOS integrated circuits | 15 | 0 | 30 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | Yes |
| JFT-2-046-s | Projektowanie Systemów Cyfrowych | 30 | 0 | 30 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | No |
| JFT-2-047-s | Microprocessor techniques | 20 | 0 | 22 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | No |
| JFT-2-067-s | Designing electronic modules | 15 | 0 | 30 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | No |
| Fizyka cząstek elementarnych | | | | | | | | | | | | | | |
| The rules for selecting groups/modules: | | | | | | | | | | | | | | |
| JFT-2-001-s | Wstęp do oddziaływań hadronów | 30 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| JFT-2-002-s | Fizyka ultrarelatywistycznych zderzeń ciężkich jonów | 20 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | No |
| JFT-2-003-s | Promieniowanie kosmiczne i neutrino | 20 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | No |
| JFT-2-004-s | Wstęp do Modelu Standardowego | 30 | 8 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| JFT-2-005-s | Metody analizy danych doświadczalnych | 30 | 15 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | Yes |
| JFT-2-006-s | Metody doświadczalne fizyki wysokich energii | 20 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | No |
| JFT-2-033-s | Particle Accelerators | 30 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | No |
| JFT-2-040-s | CP Violation in Heavy Flavour Physics | 16 | 6 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | No |