Aristotle University of Thessaloniki
Faculty of Sciences
School of Physics

School of Physics
Aristotle University of Thessaloniki

Study Guide

Academic Year 2025-2026

New Curriculum

Applicable to students admitted from

Academic Year 2022-23 onwards

Website: www.physics.auth.gr

Thessaloniki

2026

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School of Physics Contact Information

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Telephone: +302310998120, e-mail: info@physics.auth.gr

Access to the School

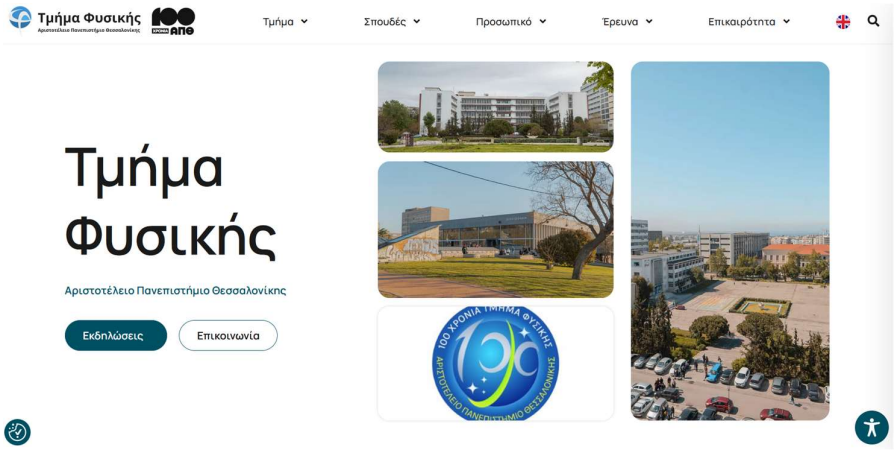
The School of Physics of the Aristotle University of Thessaloniki is located in the complex of the School of Sciences, on the north-eastern side of the campus, at the intersection of Agiou Dimitriou and Ethnikis A-mynis streets. Access is easy via

• **public transport**, as the area is served by many OASTH bus lines, which connect the university with all areas of the city [stops "Sintrivani" (1141, 1142), "Kamara" (1051, 1052), "Aggelaki" (1115), "Nos. Gennimata" (1055, 1473)]

• **metro, stop "Sintrivani"** The metro and buses operate with separate tickets and cards. The exact prices of tickets and cards, as well as the procedure for issuing the student (reduced) card, can be found on the official website of the public transport operator (OSETH). For example, a single ticket costs €0.60, a student ticket costs €0.30, while monthly or longer cards are also available.

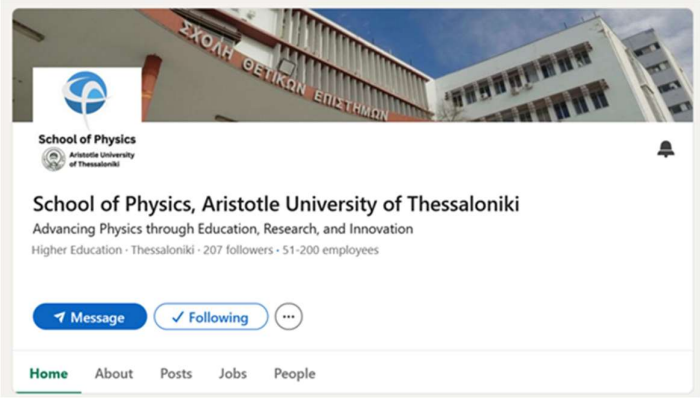
Google Maps link: https://maps.app.goo.gl/1LK6MPtzyBxgjJiUA

Official website: https://www.physics.auth.gr/



LinkedIn:

https://www.linkedin.com/company/school-of-physics-aristotle-university-of-thessaloniki



Greetings from the Chair of the School of Physics

Dear students,

On behalf of the Chair and all the teaching and administrative staff of the School, I congratulate and welcome our first-year students to the School of Physics of the Faculty of Sciences of the Aristotle University of Thessaloniki and wish everyone a good academic year.

The School of Physics of the Aristotle University of Thessaloniki, first operated in 1928 and is today one of the oldest and largest Schools, both in terms of staff and students, as well as in scientific and research activities and distinctions. It remains a pioneer in science and research and is distinguished for the high level of education it provides. At the same time, it renews its curriculum, in order to properly prepare its graduates for their better and faster professional recovery, as well as their broader scientific development.

First-year students of the academic year 2025-2026 will follow the "new curriculum" of the School. The Study Guide includes the necessary information about the School, the curriculum of the current academic year, the main points of the regulations for organizing the educational process, as well as the possibilities of attending courses at European universities through the Erasmus program. In addition to the Study Guide, additional information and updates on all issues related to education are provided through the School's website (https://www.physics.auth.gr/).

The theoretical and laboratory infrastructure courses of the first cycle of studies are followed by core courses, while a fairly wide range of elective courses provides the student with the opportunity to organize their studies at the School of Physics in a flexible, efficient and focused manner on their scientific interests.

In the second cycle of studies, the School of Physics offers six independent Programs and an interSchoolal Postgraduate Program, giving the opportunity to specialize both to its own graduates and to graduates of other Schools and Universities. Finally, our School also offers a third cycle of postgraduate studies program for the acquisition of a doctoral degree.

Happy Academic Year!

The Chair of the School

Professor Alexandra Ioannidou

Academic profile and Orientation

The academic profile and strategic orientation of the Undergraduate Program of Studies of the School of Physics are structured based on strict criteria of scientific excellence, covering a wide field of the scientific discipline. The objectives set define an operating framework that is fully aligned with the requirements of the National Council for the Study of Physics, while the structure of the program follows the principles of the **European Credit Transfer and Accumulation System (ECTS),** ensuring compatibility with other European institutions and student mobility.

The primary axis of the academic identity of the School is the quality of learning outcomes. The New Curriculumensures the education of graduates with a wide range of fundamental knowledge of classical and modern Physics. At the same time, the model of deep specialization through elective courses is adopted, where students are invited to delve into specific subjects, acquiring a high level of scientific proficiency in at least one field. Particular emphasis is placed on the development of problem-solving skills, critical thinking and research methodology, beyond purely theoretical training. This allows for the customization of the curriculum, where the student plans his specialization based on his academic and professional goals, within a clear regulatory framework and with the support of academic counseling by faculty members. Based on this design, the New Curriculum aims at the dual protection of graduates: immediate professional rehabilitation and/or academic continuity in Postgraduate Studies Programs (PSP), ensuring their competitiveness at the national and international level.

The academic profile of the School of Physics consists of a strictly structured program that combines scientific validity with adaptability. The PPS functions as a dynamic mechanism that responds to the modern demands of science and the labor market, while ensuring the quality of the degrees and the timely completion of the cycle of studies. This overall strategy ensures compliance with ETHAAE standards and enhances the credibility of the Foundation, offering a strong framework for the production of high-level scientists, while cultivating a culture of continuous improvement through systematic evaluation and feedback of all parties involved.

Part 1. Study Guide

1.1.General Information

All students, especially first-year students, must carefully study the Study Guide and especially the parts mentioned in the Curriculum (CS) and the School's Operating Regulations. However, certain points of the program and regulations require special attention, as their neglect entails invalidity of registration, loss of semester, or inability to participate in exams. Thus:

- All students of the School must pay attention to the regulations concerning the procedures for attending courses, registering and performing laboratories, and participating in course exams. Course declarations for the winter and spring semesters are submitted by students electronically every October and February, respectively, through the electronic services of the Aristotle University of Thessaloniki, using their personal access codes. The electronic services can be accessed through the website of the School of Physics (www.physics.auth.gr/home/student_support). After submitting the declaration, it is advisable to check after 1-2 days that the declaration has been registered electronically.
- Based on the course declarations, students select through the electronic service Eudoxus (www.eudoxus.gr/) the textbooks they wish to acquire for each course. Each student is entitled to select from the list of proposed textbooks only one (1) textbook for each compulsory and elective course. The procurement of textbooks is carried out from the distribution points, as determined by each publishing house after the relevant list of beneficiaries has been sent to it after the end of the declarations.
- Although each student has the opportunity to draw up his own course attendance schedule during the semesters of study, it is recommended to follow the indicative schedule and to attend the courses included in each semester.
- It is particularly recommended that students be very careful about the additional courses they can register for as well as the elective courses. It is extremely useful for the student to make sure that he has completed the courses of previous semesters that he may have to take, then for the courses of the semester he is attending and, if there is room, for other courses.
- All students of the School must regularly follow the announcements posted on the School's website (www.physics.auth.gr) or on the special notice boards in the east wing of the ground floor of the School of Sciences (S.T.E.) building as well as on the special Notice Boards of the Laboratories. In this way, they ensure timely information about any of their obligations, as well as a responsible answer to many questions of daily life and the study process at the School. Students are also encouraged to communicate with the lecturers on issues related to the relevant courses either via e-mail (physics.auth.gr, or auth.gr is recommended), or to visit them in their office during the “student hours” they have designated.
- The School operates the institution of the Academic Advisor, which aims, on the one hand, to assist in the quick and smooth adaptation of new students to the School of Physics and, on the other hand, to inform the School about the problems that students face upon entering this new environment. (See Academic Counselors Regulation in the corresponding section)
- Every semester, all students, before the start of the examination period, have the right and duty to evaluate their courses and teachers, with the aim of improving the quality of their studies. The evaluation is confidential and is carried out through the website of the Quality Assurance Unit (MODIP-AUTH http://qa.auth.gr).

1.2. University Calendar

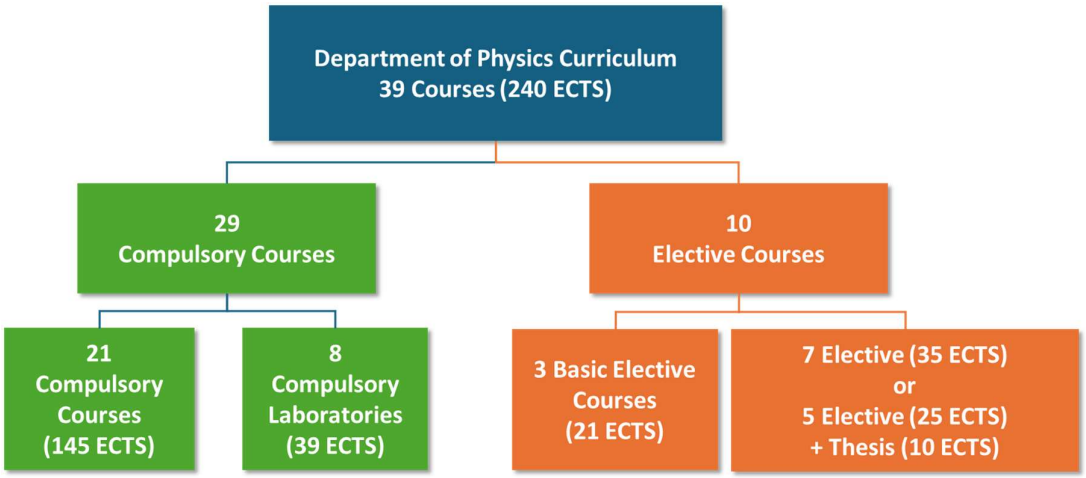
1. The academic year begins on September 1 of each year and ends on August 31 of the following year.
2. The educational work of each academic year is structured into two semesters. Each semester includes at least 13 full weeks of teaching.
3. The first semester begins at the end of September and the exams are held within the period January-February. The second semester begins in February and the exams are held within June. The number of weeks for the exams is defined in the Institution's Organization. Repeat exams are held in early September of each year.
4. Progress Week: The 7th week of each semester is reserved exclusively for alternative forms of examination. Alternative forms of examination are considered part of the educational process and this week is included in the teaching weeks.
5. Summer vacations last from the beginning of July to the end of August.
6. Classes are suspended: a) From Christmas Eve until the day after Epiphany. b) On Clean Monday and the day after. c) From Holy Monday until Thomas Sunday. d) On the day of the general student elections, and e) on the day of the rector's elections. Only staff performing special duties work on vacation days.
7. There are no classes and exams on weekends and on the following holidays - anniversaries:
   - Saint Demetrius (October 26)
   - The national holiday of October 28
   - The anniversary of the Polytechnic uprising (November 17)
   - The Three Hierarchs (January 30)
   - The Annunciation (March 25)
   - May 1
   - The Holy Spirit

1.3. Structure of the Curriculum

The maximum duration of study for the School of Physics is the minimum period of study (8 academic semesters), increased by four (4) academic semesters.

The maximum duration of study in a first-cycle study program with a minimum duration of eight (8) academic semesters for the award of the degree is this time, increased by four (4) academic semesters. After completing the maximum duration of study, without prejudice to the paragraphs of art. 76 of Law 4957/2022, the Administrative Council of the School issues a deregistration act. **These provisions do not apply to students with a certified disability of at least 50%.**

The Curriculum includes **39 courses**, which are divided into compulsory courses and elective courses (those that the student chooses at his/her own discretion). **The compulsory courses are 29 (21 courses + 8 compulsory laboratories) and 10 elective courses, of which 2 correspond to the Degree Thesis. The total number of ECTS credits is 240.**



Curriculum Structure of the School of Physics

COMPULSORY COURSES

The teaching hours of compulsory courses are divided into Theory hours (Θ): i.e. hours of theory lectures (lectures), and Practice hours (E): i.e. hours of explanations, questions, and solving exercises. The weekly teaching schedule clearly states the type of teaching of each lesson hour (Θ or E).

ELECTIVE COURSES

The elective courses that each student is required to attend are a total of 10, which are taught in the 7th and 8th semesters. These courses aim to gradually enhance the students' knowledge in one or more thematic areas of their choice, without specialization, which is offered at the postgraduate level.

There are two groups of courses with specific characteristics, each of which:
1) Basic Elective Courses, and 2) Elective Courses.
The student must choose 3 courses from the group of Core Elective courses and at least 7 Elective courses.

The students may choose up to **one (1) course** from those offered by other Schools, which corresponds to a general elective course. This will only be done after approval by the Student Affairs Committee, to which the student must make a timely application, indicating the basic characteristics of the course he/she has chosen (Title, School offering it, teaching hours, course website or content).

DIPLOMA THESIS

The **Diploma Thesis is not mandatory**. If a Thesis is prepared, it is equivalent to **2 Elective courses**. The Thesis is presented publicly and the presentation is announced electronically to all members of the School. The grading of the thesis is done by a three-member committee of members of the Teaching Staff (Faculty of Education, Teaching and Learning) appointed by the supervisor in collaboration with the Director of the respective School.

The Thesis can be written in English. In this case, before the English text, a comprehensive summary in Greek is provided.

TEACHING COURSES IN TWO SEMESTERS

The courses Internship and Thesis are offered in both semesters. Also, laboratory courses are offered in two semesters, when it is not possible to cover the total student population in the regular semester. (Only those who have registered for them in the specific semester are entitled to take the exams in these).

PREREQUISITE LABORATORIES

a) The **Applied Informatics Laboratory** is a prerequisite for **all laboratory courses** in the School

b) The **Physics Laboratory** is a prerequisite for **all subsequent laboratory courses** in the School,

c) The **Electric Circuits Laboratory** is a prerequisite for the **Electronics Laboratory**.

UPPER AND LOWER NUMBER OF STUDENTS FOR ELECTIVE COURSES

A) A lower number of students is defined per category of options. This is determined by the number of students who appeared for the course exams in the periods of **February, June and September** (each student counts once).

If the required number is not completed in two consecutive years in a specific course, the School has the possibility to suggest:

a) extension of teaching for another year with justification or

b) ways to upgrade the course or

c) proposal to replace the course. Otherwise, the course will be deleted from the curriculum.

The lower limits of the number of students are: Basic option 10, special and general option 5.

B) For each elective course, an upper limit is set, which is determined by the School Assembly.

C) Laboratory elective courses may establish specific limits depending on educational opportunities.

COURSE REGISTRATION

The number of courses that a student is entitled to register per semester is 2xN, where N is the number of courses in the semester he/she is studying. The number of courses that he/she can register from higher semesters is 2 (two) per semester.

Students who complete the minimum period of study ("degree" students) are not subject to a restriction on registering courses, provided that they have been taught in a previous semester and the course continues to exist in the Curriculum. The June examination also includes the elective courses of the winter semester, in the exams of which "degree" students who have registered and attended the course in the winter semester of the current academic period can participate.

In addition to the 10 required elective courses for the degree, a student may register and take two additional elective courses for grade correction. The additional courses are not counted towards the degree grade but are listed in the detailed score along with the additional ECTS. Courses that have been registered under the Erasmus program cannot be removed, nor the Practical Training course, provided that it is registered under the NSRF program. A student who has recognized an unrelated option under Erasmus cannot declare an option from another School.

Students who have been admitted through qualifying exams may, upon submission of a relevant application, request the recognition of courses that they have successfully completed in their previous studies. The application for recognition is submitted once within three months of the start of studies at the School and before the start of the examination period.

The recognition of courses is carried out by decision of the School Assembly. Depending on the number of courses recognized, students may enroll in a longer semester of studies.

STUDY RULES

- Students register at the beginning of each semester on dates set by the School and declare the courses they choose to attend. A student may be automatically dropped upon request or as prescribed by applicable law.
- Students who wish to enroll in the **Part-Time Program** submit an application to the School Secretariat in accordance with the Part-Time Study Regulations (details in the Part-Time Study Regulations, on the Website).
- Students who have not exceeded the maximum attendance limit may, upon their request, interrupt their studies for a period not exceeding two (2) years. The application is submitted to the School Secretariat before the start of the academic semester from which the student wishes to interrupt his/her studies. The application must state the requested period of time and the reasons for the interruption (e.g. health, financial, family reasons). The right to interrupt studies may be exercised once or in parts for a period of at least one (1) academic semester, but the duration of the interruption may not exceed a cumulative two (2) years if granted in parts.
    - Student status is suspended during the period of interruption of studies and participation in any educational process is not permitted. The period of interruption of studies is not counted towards completing the maximum duration of studies. During the last academic year before the completion of the maximum period of study, a request for interruption is allowed only to students who have accumulated at least seventy-five percent (75%) of the required teaching and credit units for the completion of their studies. Upon the end of the interruption, the student returns to a regular study status, regaining the rights and obligations associated with active student status.
    - Lifting the interruption of study is possible through the above procedure, upon application by the student to the Secretariat of the relevant School and a decision by the School Assembly without requiring additional supporting documents. In this case, for the smooth continuation of the student's studies upon his return, the lifting of the interruption cannot be carried out in the middle of the academic semester.

- Each semester includes at least **thirteen (13) full weeks** of teaching. An extension of the duration of a semester is permitted only in exceptional cases in order to complete the required minimum number of teaching weeks, it cannot exceed two (2) weeks, and is made by decision of the Rector, upon proposal of the Dean of the School.
- If for any reason the number of teaching weeks carried out in a course is less than thirteen, the course is considered not to have been taught and is not examined, and any examination thereof is invalid and the grade is not counted towards the award of the degree.
- **Examinations** are held exclusively after the end of the winter and spring semesters for the courses taught in these semesters, respectively. The student is entitled to be examined only in the courses included in the course declaration submitted at the beginning of the semester. The student is entitled to be examined in the courses of both semesters during his September examination period and only in the courses included in his course declarations of the current academic year. The 7th week of each semester is reserved exclusively for alternative examination forms. Alternative examination forms are considered part of the educational process and this week is included in the teaching weeks. Special care is taken for the oral examination of students with proven dyslexia before their admission to the institution, according to a procedure defined in the Internal Regulation.
- The grade in each course is determined by the instructor, who may organize written and/or oral examinations at his discretion or rely on assignments or laboratory exercises.
- If the student fails more than **three (3) times** in the same course, he/she may request, by application to the President of the School, his/her evaluation by other examiners. The student completes his/her studies and is awarded a degree when he/she successfully passes the courses provided for in the curriculum and accumulates the required number of credit units (**240 ECTS**).

REGISTRATION IN THE LABORATORIES AND COMPLETION REQUIREMENTS

- Students, in addition to registering for the laboratory course, must register for each laboratory in order to attend it. Registrations are made at the beginning of each semester according to the announcements of the laboratory managers. Priority registration may be given to students who meet specific requirements according to the laboratory regulations.
- The instructors of the laboratory courses receive students during each semester on predetermined days and times for topics related to the corresponding laboratory course. Students address themselves to the instructors of the laboratory School they are attending.
- In each laboratory School, students are divided into two-member groups to conduct the exercises. The members of each group perform the experimental work together and individually present the written results, according to the instructions of each laboratory.
- Laboratory exercises include the following stages, which are carried out in accordance with the individual laboratory regulations: Preparation of students for the theoretical part of the exercises. Experimental work. Written work. Examination of students for the theoretical and/or experimental part of the exercises.
- The final grade in each laboratory course is obtained in combination from the evaluation of the students' performance in each of the above stages.
- The conduct of all laboratory exercises is mandatory. Only **one (1) or two (2) fully justified absences (for courses with fewer or more than six (6) laboratory exercises, respectively)** may be made up during the semester and after consultation with the teachers.

- Students are given the opportunity to settle any other outstanding matters regarding the conduct and completion of laboratory exercises in a timely manner during the current semester. If outstanding issues are not resolved, students are required to repeat the laboratory course.

CALCULATION OF THE DEGREE GRADE

The method of calculating a degree is **uniform for all Universities in Greece** and is determined by Ministerial Decision No. Φ141/Β3/2166 (Government Gazette 308, issue B, 18/06/1987), as amended and supplemented by the provisions of Ministerial Decisions Nos. Φ141/Β3/2457/1988 (Government Gazette 802, issue B), Φ141/Β3/2882/1989 (Government Gazette 507, issue B) and Φ141/Β3/4182/1989 (Government Gazette 693, issue B).

For the calculation of the degree grade of the School of Physics, Aristotle University of Thessaloniki and the composition of the courses listed therein, only the **29 compulsory courses of the PPS and the 10 elective courses (or 8 elective courses plus the Degree Thesis) are counted.**

Additional elective courses that the student attended and successfully examined are not counted towards the degree grade but are listed in the Diploma Supplement.

For the calculation of the degree grade (Ministerial Decree Φ.141/Β3/2166, Government Gazette 308/Β'/18-6-1987), the grade of each course is multiplied by the course weighting factor and the sum of the individual products is divided by the sum of the weighting factors of all courses. The course weighting factors are now identical to the ECTS that correspond to them.

The total number of ECTS credits required to obtain a degree is 240.

Based on its value, the degree grade is accompanied by a classification as follows:

"Good" characterizes grades from 5.00 to 6.49 (inclusive).

"Very good" characterizes grades from 6.50 to 8.49 (inclusive).

"Excellent" characterizes grades from 8.50 to 10.

SPECIAL CASES AND SPECIAL PROGRAMS

- Students admitted through qualifying exams may be enrolled in a longer semester, upon their request and after approval by the School.
- • In addition to the Curriculum, the School also offers the Pedagogical and Teaching Competence Program (https://www.physics.auth.gr/ppde), which is optional. This program, in accordance with applicable legislation, certifies that graduates who intend to pursue professional educational fields have satisfactory teaching and pedagogical competence. The Pedagogical and Teaching Competence Certificate is granted after the student completes the PPS of the School of Physics in accordance with the applicable legislative framework. Students of older study programs may fulfill the requirements for obtaining a degree based on the Entrance Curriculum defined by the School when it cannot, for objective reasons, support older study programs. Students who are not covered by the Inclusion Program are enrolled in the current Program of Studies, with the right to submit an application for course recognition, which is examined by the Student Affairs Committee.
- The School provides a Certificate of Computer Knowledge to its graduates if they have attended and successfully passed a series of courses which are defined by decision of the Assembly or

the Board of Directors and are posted on the School's website. These courses are: Applied Informatics Laboratory, General Laboratory, Optics Laboratory, Materials Structure Laboratory, Nuclear Physics Laboratory (Board Decision 8/8-6-2007), and Computer Programming and Computational Physics (GA Decision 5/17-12-2007). The certificate is not provided before the completion of the studies.

STUDENT COUNSELORS

The School of Physics, in the context of improving the level of its studies and at the same time more effectively addressing the problems of the students of the School and especially the newcomers, has activated the institution of the Student Counselor in recent years, aiming on the one hand to provide responsible advisory work to undergraduate students, and on the other hand to encourage communication between students and professors of the School, so as to establish a climate of mutual trust and intimacy.

Information: https://www.physics.auth.gr/spoudes/proptychiaka/symvoulos-spoudon/

ADVICE TO STUDENTS

For the most effective, consistent and successful course of their studies, the School and the Academic Teaching Staff advise the students to do the following:

- **Follow the indicative program in the Study Guide.**
- **After the basic courses of the semester, they should try as a priority to successfully pass the courses they have failed in previous semesters, so that there is no accumulation of many courses at the end of their studies after eight (8) semesters (in the unwisely called "degree").**
- **Attendance and examination of courses should be done with planning, with calmness and based on the capabilities of each student. It is highly recommended that they consult their professors and not the rumors of the corridors.**
- **In any case of registering for a course from an advanced semester, they should make sure that they have the necessary basic knowledge.**
- **To cover elective course slots with courses that broaden and enrich the knowledge they wish to have.**

1.4. Compulsory Courses and Laboratory Exercices

Semester		Course	Hours	ECTS
1	1	Calculus I	5	8
	2	Vector Calculus, Linear Algebra and Analytic Geometry	5	8
	3	Applied Informatics Laboratory	4	6
	4	Mechanic	5	8
Semester		Course	Hours	ECTS
2	5	Calculus II	4	6
	6	Laboratory Exercises in Physics	4	5
	7	Electricity-Magnetism	5	7
	8	Waves-Fluids -Thermodynamics	5	7
	9	Computer Programming	4	5
Semester		Course	Hours	ECTS
3	10	Differential Equations	4	6
	11	Electric Circuits Laboratory	4	6
	12	Crystallography-Structure of Mater Laboratory	4	6
	13	Integral Calculus of Many Variables	4	6
	14	Atmospheric and Enviromental Physics	4	6
Εξάμηνο		Course	Ώρες	ECTS
4	15	Atomic and Molecular Physics Laboratory	3	4
	16	Electronics	4	5
	17	Theoretical Mechanics	6	9
	18	Mathematical Methods in Physics	4	5
	19	Modern Physics	5	7
Semester		Course	Hours	ECTS
5	20	Electronics Laboratory	3	4
	21	Thermal Physics	6	10
	22	Quantum Mechanics	6	10
	23	Optics	4	6
Semester		Course	Hours	ECTS
6	24	Astronomy & Astrophysics	4	5.5
	25	Optics Laboratory	3	4
	26	Electromagnetism	6	9
	27	Nuclear Physics & Elementary Particle	4	6
	28	Solid State Physics	4	5.5
Semester		Course	Hours	ECTS
7	29	Nuclear Physics Laboratory	3	4
	30	Basic Elective 1	4	7
	31	Basic Elective 2	4	7
	32	Basic Elective 3	4	7
	33	Elective 4	3	5
Semester		Course	Hours	ECTS
8	34	Elective 5	3	5
	35	Elective 6	3	5
	36	Elective 7	3	5
	37	Elective 8	3	5
	38	Elective 9	3	5
	39	Elective 10	3	5
		Total		**240**

** Όλα τα υποχρεωτικά εργαστήρια παρέχονται και στο διαδοχικά επόμενο εξάμηνο (εαρινό ή χειμερινό) από αυτό στο οποίο εντάσσεται το κάθε εργαστηριακό μάθημα, για φοιτητές που δεν το έχουν παρακολουθήσει ή δεν το έχουν ολοκληρώσει επιτυχώς.*

1.5. Elective Courses

Selection from the courses of the respective core and elective courses.
They are distributed as follows:
3 core elective courses
7 elective courses
* It is reminded that students can register one course per semester from a higher semester. It is recommended that students register one Elective course in the 5th and 6th semesters.

7th SEMESTER – BASIC ELECTIVE COURSES			
	Course	**Hours**	**ECTS**
1	Astrophysics	**4**	**7**
2	Atmospheric Environment	**4**	**7**
3	General Theory of Relativity	**4**	**7**
4	Didactics of Physics	**4**	**7**
5	Solid State Physics Labatory	**4**	**7**
6	Electronic Circuits	**4**	**7**
7	Non Linear Dynamical Systems and Chaos	**4**	**7**
8	Advanced Quantum Physics	**4**	**7**
9	Nuclear Physics	**4**	**7**
10	Telecommunication Systems	**4**	**7**
11	Computational Physics and Applications	**4**	**7**
12	Atmospheric Measurement Physics	**4**	**7**
13	Solid State Physics II II	**4**	**7**
14	Elementary Particle Physics	**4**	**7**
15	Physics of Surfaces and Nanostructures	**4**	**7**
16	Hamiltonian Mechanics	**4**	**7**

7th SEMESTER – ELECTIVE COURSES			
	Course	**Hours**	**ECTS**
1	Structural Properties and Miscroscopy of Materials	**3**	**5**
2	Senior Thesis	**1**	**10**
3	Accelerators and Detectors in Nuclear and Particle Physics	**3**	**5**
4	Medical Physics and dosimetry	**3**	**5**
5	Cosmic Radiation	**3**	**5**
6	Non Linear Circuits	**3**	**5**
7	Fluid Mechanics	**3**	**5**
8	Celtic Mechanics and Space Applications	**3**	**5**
9	Internship	**3**	**5**
10	Environmental Radioactivity	**3**	**5**
11	Characterization Techniques & Materials in Conservation of Works of Art	**3**	**5**
12	Physical Chemistry	**3**	**5**
13	Chemistry	**3**	**5**
14	Digital Systems	**3**	**5**

8th SEMESTER – ELECTIVE COURSES			
	Course	**Hours**	**ECTS**
1	Renewable Energy Resources	**3**	**5**
2	Numerical Analysis	**3**	**5**
3	Biology	**3**	**5**
4	Biophysics	**3**	**5**
5	Geometrical Optics, Photometry and Applications	**3**	**5**
6	Geophysics - Seismology	**3**	**5**
7	Linear Circuits	**3**	**5**
8	Propagation of Telecommunications Signals	**3**	**5**
9	Differential Geometry	**3**	**5**
10	Senior Thesis	**1**	**10**
11	Bioelectromagnetism	**3**	**5**
12	Embedded Systems	**3**	**5**
13	Didactics of Physics Laboratory	**3**	**5**
14	Educational Technology Laboratory	**3**	**5**
15	Electronic Circuits: Laboratory course	**3**	**5**
16	Nuclear Physics Laboratory II	**3**	**5**
17	Laboratory of Telecommunications and Networks	**3**	**5**
18	Research Study-Scientific Report	**3**	**5**
19	Topics in Nuclear Theory	**3**	**5**
20	Quantum Optics - Lasers	**3**	**5**
21	Cosmology	**3**	**5**
22	Crystallography and Applications	**3**	**5**
23	Magnetic Materials and Applications	**3**	**5**
24	Mathematical Methods in Physics - II	**3**	**5**
25	Meteorology	**3**	**5**
26	Metrology and Quality Systems	**3**	**5**
27	Foreign Language (English)	**3**	**5**
28	Global Environmental Changes	**3**	**5**
29	Energy Production from nuclear and convetional energy sources	**3**	**5**
30	Observational Astronomy	**3**	**5**
31	Experimental verification of Elementary Particle Physics	**3**	**5**
32	Probability and Statistics	**3**	**5**
33	Internship	**3**	**5**
34	Topics in Quantum Physics	**3**	**5**
35	Radio Astronomy	**3**	**5**
36	Technology-Materials and Social-Economic Environment	**3**	**5**
37	Technology and Design of Integrated Circuits	**3**	**5**
38	Computational Physics of Materials	**3**	**5**
39	Philosophy of Physics	**3**	**5**
40	Radiation Physics and Applications of Isotopes	**3**	**5**
41	Physics and technology of semiconductor devices	**3**	**5**
42	Plasma Physics	**3**	**5**
43	Physics of the Human Body	**3**	**5**
44	Physics of Metals	**3**	**5**
45	Physics of Materials	**3**	**5**
46	Physics of Liquids and Applications in Materials Science	**3**	**5**
47	Photonics and Applications	**3**	**5**

1.6. Diploma Thesis

The Thesis is optional and is listed in the Curriculum as a course entitled “Introduction to Research Methodology”. It is equivalent to two elective courses. The Thesis is presented publicly. The announcement of the presentation is posted on the School’s website and on the notice board of the supervisor’s School or Laboratory. The thesis is graded by a three-member committee of teaching staff members (Professors, Assistant Professors) who are appointed by the supervisor.

The student begins the preparation of the thesis in the 7th or 8th semester. The framework for preparing a Master's Thesis is as follows:

- The members of the Teaching Staff (Faculty of Education, PhD holders) announce at the beginning of each semester the general title or research area of the Master's Thesis that they intend to supervise and invite students to express interest. The teachers inform the Director of the School about the Master's Thesis that they have assigned.
- The supervisors assign the assignments to the students, after selection if there is more than one declaration per assignment, and specify the title of the Master's Thesis. The assignment and selection criteria are determined by the supervisor, and include the relevant courses that the candidates have taught as well as their performance in them, as well as the supervisor's evaluation during the interview.
- The Master's Thesis can also be prepared with co-supervision by a faculty member from the same or another School of the Aristotle University of Thessaloniki or with co-supervision by a member of the School's Academic Staff who holds a doctoral degree. In this case, the co-supervisor is included among the members of the examination committee.
- The Master's Thesis can also be prepared in collaboration by two students, with the same topic, but with distinct subjects, and the same supervisor. The public presentation is made jointly and the examination committee grades them separately.
- Upon completion of the Master's Thesis, the student delivers the text of the Master's Thesis to the supervisor. The public presentation of the Master's Thesis is made before a three-member examination committee, consisting of the supervisor and two lecturers of the School (members of the Faculty or the Academic Staff), or in the case of co-supervision by the co-supervisors and an additional member of the Faculty of the School.
- The presentation of the Master's Thesis is made during the examination periods and also within a period of fifteen days before the start and after the end of the examination periods.
- After completing the presentation, the student delivers to the School Library the text of the work in digital format as well as a separate summary in Greek and English. In the case of a Master's Thesis prepared in collaboration with two students, the above procedure is followed separately for each student.
- The language of writing is Greek. The Master's Thesis may also be written in English. In this case, an extensive summary in Greek is provided before the English text.
- The following are delivered to the Secretariat: 1) the transcript, 2) the certificate of public presentation and 3) the certificate of deposit of the Thesis that the student has received from the School's library

It is noted that the student who prepares the thesis accepts that his/her work cannot be the product of plagiarism or the exclusive use of artificial intelligence. Students must explicitly state whether and how they used AI, mention the tools they used and explain the contribution of AI to their work.

Copying, plagiarism or generally tampering with the process of conducting a bachelor's/diploma thesis constitutes a disciplinary offense and is dealt with in accordance with the provisions of the current provisions.

Bachelor's/diploma theses are submitted exclusively in electronic form to the relevant School of the Central Library (Central Repository of the Institution) of the Aristotle University of Thessaloniki and to the archive kept at the School.

Detailed instructions for writing a Bachelor's Thesis are presented on the School's website, in the Bachelor's Thesis Preparation Regulation

1.7. Internship

The New Curriculum provides the opportunity to carry out an Internship. The Internship of PPS students is optional and lasts two (2) months, and is carried out based on the provisions of the School's Internship Regulation.

The framework of the Internship course is as follows

- Through the Internship, students of the School practice under conditions of real and paid work, in private and public bodies with subjects related to Physics.
- It is an Elective course and is available to students who are studying from the 7th semester of studies and above, provided that they have accumulated at least 1/3 of the total number of ECYS required to obtain the degree (i.e. ≥ 80 ECTS). It is evaluated, like all courses, and is mandatory listed on the degree.
- It is carried out in the following two-month periods: November – December during the winter semester, and February – March, April – May during the spring semester. In the event of unallocated positions being available from the Aristotle University of Thessaloniki Internship Office, the School may offer additional Internship positions in the two-month period of July – August.
- For the selection of students, the following are taken into account and considered: The average grade of the courses in which the student has successfully passed the examination, the number of ECTS points he/she has accumulated, the average grade of related courses, and the percentage of related courses that have been successfully completed in relation to the total number of related courses he/she has declared.
- Detailed information on the preparation of the Practical Exercise and the relevant regulations are presented on the website: https://www.physics.auth.gr/course/praktiki-askisi/

1.8. Expected Learning Outcomes

The expected learning outcomes of the Undergraduate Program of Studies of the School of Physics determine that upon successful completion of the Program of Studies of the School of Physics, students are expected to

- have a broad background of knowledge in mathematical computational tools that are essential in the field of Physics
- have been exposed to both the basic concepts of Physics (e.g. Quantum Mechanics, Mechanics, Thermodynamics, Electromagnetism, Nuclear, Solid State) and its applications (e.g. Electronics, Atmospheric Physics, Materials Physics, etc.).
- have become familiar with the investigation of international bibliography in English through libraries and/or the internet,
- have developed analytical and synthetic skills for solving problems and writing technical reports,

- have been trained in individual and group work
- have acquired the ability to support their work in public.
- have the formal and substantive qualifications to teach Physics and related subjects in secondary education and to work in research or science in public and private institutions

Part 2. Pedagogical & Teaching Competence Program (P.P.D.E.)

(Subject to approval by the Senate of the Institution)

Pedagogical and Teaching Competence (PDE) is certified by a certificate issued by the School of Physics of the School of Sciences of the Aristotle University of Thessaloniki. It is a certification that ensures that graduates who intend to pursue professional educational fields have satisfactory teaching and pedagogical competence. The legislation governing Pedagogical and Teaching Competence is Law 3848/2010 (Government Gazette A'/71) ("Upgrading the role of the teacher - establishing evaluation and meritocracy rules in education and other provisions"), article 2, as amended by paragraph 22 of article 36 of Law 4186/2013 (Government Gazette A'/193) and by article 111 of Law 4547/2018 (Government Gazette A'/102).

Pedagogical and Teaching Competence (PDE) in the School of Physics of the University of Thessaloniki constitutes a parallel Course of Study to the degree with courses listed and categorized in the Table: "Courses of the Course of Study for the P.P.D.E. in the School of Physics". The program requires the attendance of at least 6 courses as follows:

I. One from thematic unit A
II. Two or three from thematic unit B
III. At least one from thematic unit C1
IV. Two from thematic unit C2
4 of these are mandatory courses of the undergraduate study program and the rest (at least 2 courses) are elective. The PDE is certified by completing at least 30 ECTS and by selecting courses according to the above.

Remarks:
• Thematic unit A is covered by courses of collaborating Schools (School of Philosophy & Pedagogy, School of German Language & Literature and School of Informatics). The course that will be selected from this thematic unit is NOT taken into account in the sum of ECTS for obtaining the degree, unless it is declared as a free elective course.
• The thematic unit C1 contains courses that support microteaching and are courses of the Laboratory of Teaching of Physics and Educational Technology. These courses can also be selected independently of the Curriculum and can only be counted towards Pedagogical and Teaching Competence. In this case, a relevant declaration by the Student to the Secretariat is required.
• The course “Practical Practice” is accepted as a course of study for the PDE, ONLY if implemented in a school. (PRACTICAL EXERCISE (see p. 59))

Students who have been admitted to Schools or Schools up to and including the academic year 2022-2023 may receive a certification of pedagogical and teaching competence in accordance with paragraph a) of paragraph 4 of article 54 of Law 4589/2019 (A’ 13), provided that the Schools or Schools to which they have been admitted granted the said certification at the time of their admission.

Table. Courses of the Study Cycle for the P.P.D.E. in the School of Physics

THEMATIC UNIT A: Education and Training Issues Elective courses from other Schools (1 course selected)	**semester**	**hours/week**	**ECTS**
School Pedagogy I (School of Philosophy & Pedagogy)	X	3	5
School Pedagogy II (School of Philosophy & Pedagogy)	E	3	5
Educational Psychology (School of Philosophy & Pedagogy)	X	3	5
Introduction to Pedagogy (School of Philosophy & Pedagogy)	X	3	6
Introduction to Pedagogy Research (School of Philosophy & Pedagogy)	X & E	3	6
Introduction to Pedagogy: Issues of Pedagogical Training (School of German Language & Literature)	X	3	6
Learning Theories & Educational Software (School of Informatics)	E	4	5
THEMATIC UNIT B: Learning and Teaching Issues Compulsory courses of the Physics School's PPS + Seminar (as an optional option)	**semester**	**hours/week**	**ECTS**
Applied Informatics Laboratory Y (1st semester)	X	4	5
Computer Programming & Computational Physics Y (2nd semester)	E	3	4
Seminar: Physics Teaching Issues (Physics School)	X & E	1	2
THEMATIC UNIT C1: Special Teaching and Practice Elective courses of the Physics School's PPS (at least 1 course is selected)	**semester**	**hours/week**	**ECTS**
Educational Technology Laboratory General Elective	E	3	4
Physics Teaching Laboratory Special Elective	X	3	4
Practical training (in a school unit) General Elective	X/E	3	4
Introduction to Physics Teaching Basic Elective	X/E	3	5
THEMATIC UNIT C2: Special Teaching and Practice Mandatory courses of the School of Physics			
General Laboratory Y (2nd semester)	E	4	5
Electrical Circuits Laboratory Y (3rd semester)	X	3	5
Minimum Number of ECTS			**30**

Part 3. The School of Physics, Aristotle University of Thessaloniki

Administrative structure of the School of Physics

The Assembly (S) of the School, which is also the highest administrative body of the School and is chaired by the President or Vice President of the School, consists of the Directors of the Schools, twenty-four (24) faculty members proportionally from the Schools by grade, and one representative of undergraduate students, postgraduate students, members of Special Technical and Laboratory Staff (ETEP), members of Special Scientific Staff (EEP) and members of Special Scientific Teaching Staff (EDIP).

Chair of the School of Physics

Alexandra Ioannidou, Professor
anta@physics.auth. gr 2310998599

Vice President of the School of Physics

Balis Dimitrios, Professor
balis@auth.gr 2310998192

SCHOOLS

Astrophysics, Astronomy and Mechanics (AAM)
Director: Stergioulas Nikolaos, Professor
niksterg@auth.gr 2310998233
https://www.physics.auth.gr/School/astrofysikis-astronomias-kai-michanikis/

Nuclear Physics and Elementary Particle Physics (NPP & PSE)
Director: Stoulos Stylianos, Professor
stoulos@auth.gr 2310998202
https://www.physics.auth.gr/School/pyrinikis-fysikis-kai-fysikis-stoicheiodon-somatidion/

Condensed Matter & Materials Physics (CMMP)
Director: Dimitrakopoulos Georgios, Professor
gdim@auth.gr 2310998562
https://www.physics.auth.gr/School/fysikis-sybyknomenis-ylis-kai-ylikon/

Electronics and Computers (E & C)
Director: Siozios Konstantinos, Professor
ksiop@auth.gr 2310998774
https://www.physics.auth.gr/School/ilektronikis-kai-ilektronikon-ypologiston/

Applied Physics and Environmental Physics (EP &
Director: Sarafidis Charalambos, Associate Professor
hsara@physics.auth.gr 2310990355
https://www.physics.auth.gr/School/efarmogon-fysikis-kai-fysikis-perivallontos/

Teaching and Technical Staff

The teaching staff of the School consists of faculty members and members of the Technical and Scientific Staff (EDIP).

The entire staff, with all the necessary information such as rank, Department, Subject, Email, Telephone, Office and hours of cooperation, can be found by students at the link https://www.physics.auth.gr/prosopiko/meli-dep/ , for faculty members and https://www.physics.auth.gr/prosopiko/edip/ , for members of the Technical and Scientific Staff.

Respectively, the members of the technical staff (Technical and Scientific Staff) can be found at the link https://www.physics.auth.gr/prosopiko/etep/

Secretariat of the Physics School

The School Secretariat is housed on the first floor of the Secretariat building of the S.T.E., which is located in front of the new building of the S.T.E. (School of Biology building). Its entrance faces east. The Secretariat serves from 08:30 to 15:30, preferably remotely. In case a personal visit to the Secretariat is required, this is done after a scheduled appointment, from 10:30 to 12:00 (tel. 2310 998116, email: info@physics.auth.gr), observing all the protection measures. Applications to the Secretariat are submitted through the electronic services (SIS – https://sis.auth.gr/) for students or the KEPs through the new electronic platform gov.gr and the certificates issued are sent electronically.

Head of Secretariat: Vigli-Papadaki Lefkothea,

Staff: Gounari Ioanna, Kaimakamis Georgios, Koufta Maria, Tsirou Kalliopi

Contact:

- **Undergraduate studies: +30 2310 998130-40-50-60**
- **Postgraduate studies: +30 2310 998140-50**
- **Doctoral theses: +30 2310 998140-50**
- **Faculty-EDIP-ETEP members: +30 2310 998170-8116**
- **Protocol – Administrative: +30 2310 998116**

Library

The Library of the School of Natural Sciences (SNS) is located on the ground floor of the Biology building. The libraries of the Schools of Biology, Geology, Informatics and Physics have been merged into the library.

The new "Theophrastos" library, on the ground floor of the Biology building, includes printed and digital collections of documents (books, magazines, maps, brochures, CD-DVDs, information and teaching materials, proceedings of conferences and organizations, etc.).

Hours: Mon-Fri 8.30-15.00, Phone: 2310 998387, Email: lib@sci.auth.gr

Additional library services are provided to students by the Central Library and Information Center (CLI) unit of the Aristotle University of Thessaloniki. The Library offers students the following services:

- Study areas and central computer islands

- Possibility of borrowing books
- Electronic access to bibliographic sources
- Access to electronic courses
- Training in bibliographic search issues

Lecture Rooms

Rooms D13, A11, A12, A13, A21, A22 and A31 in the main building. (W = West wing, E = East wing, index 1 = basement, 2 = ground floor, 3 = 1st floor).

"V. Xanthopoulos" Hall at the Observatory.

Computing Center

The School of Physics has a Computing Center with ~15 physical servers, ~65 virtual machines and ~150 virtual hosts.

The services it offers are:

- Email: Access via IMAP(S)/POP3(S)/Webmail, spam/virus checking, Email lists (Monitored or Free),
- Websites: Physics School Website, Websites of laboratories, groups, research programs, courses, etc. (~150)

The Computer Center also implements User Support through:

- Providing technical assistance and information to faculty members - staff - students
- Support for Computer Center: More specifically, there is a free access computer Center, with 20 seats, and three Centers available for conducting courses (with a capacity of 15, 15 and 17 people) which operate from Monday to Friday 09:30-16:00.

The Centers are located on the 4th floor of the School's glass building and are supported by the School's staff. The School's students also have access to the Central Computer Island of the Aristotle University of Thessaloniki, which is housed on the ground floor of the Central Library, with a capacity of 30 workstations.

Finally, the Computer Center supports the Applied Informatics Laboratory (1st & 2nd semesters) but is also actively involved in other laboratory courses of the School of Physics where its participation is required.

Computer Center Manager: K. Liakakis-2310-998370 -ETEP, email: pclab@physics.auth.gr

Part 4. Study Regulations of the School of Physics

The School's Website, (https://www.physics.auth.gr/kanonismoi/), includes all Regulations concerning attendance and academic institutions. More specifically, the following are posted:

1. Internal Regulation of the New Curriculum

2. Part-time Attendance Regulations

3. Erasmus + / BIP Mobility Regulations

4. Academic Advisor Regulations

5. Degree Thesis Regulations

6. Internship Regulations

7. Student Complaints and Appeals Management Regulations

Part 5. University Services

CENTER FOR PSYCHOLOGICAL AND COUNSELING SUPPORT, AUTH

The Center for Psychological and Counseling Support is a service of the Aristotle University of Thessaloniki that has been operating since 1999. It provides students of the AUTH with free counseling and psychological support services on issues that concern them such as: anxiety, stress, difficulties adapting to a new environment or in studies, family/personal difficulties, sexual issues, psychosomatic problems, etc.

Information: https://www.auth.gr/university_unit/kesypsy/

EQUAL ACCESS UNIT FOR PEOPLE WITH DISABILITIES AND PEOPLE WITH SPECIAL EDUCATIONAL NEEDS

The mission of the Unit is to ensure the full, equal and meaningful participation of all members of the university community with disabilities or special educational needs in all educational, research and administrative activities of the Aristotle University of Thessaloniki.

Information: https://www.auth.gr/directorate/mip/

STUDIES AND CAREER LIAISON OFFICE

The goal of the Liaison Office (LO) is to help students and graduates of the Aristotle University of Thessaloniki to smoothly approach their future careers and to seek employment commensurate with the knowledge they gained from their studies, by providing information regarding the opportunities offered to them, both in continuing their studies and in their transition to the labor market.
The main areas of information provided are, with regard to studies, the study programs of Greek and foreign universities, scholarships and endowments, student mobility programs in Europe, educational seminars, conferences, workshops and European Union issues.
With regard to employment, the main areas of information are job vacancies in the private and public sectors, internship programs, surveys on the labor market and employment of AUTH graduates, employer and professional bodies (e.g. associations, chambers) and support for business ideas.
In addition, the DG provides advisory services on the drafting of CVs and cover letters, personnel selection interviews, career planning and job search techniques.
Finally, during the academic year, workshops and seminars are organized on the topic of information in the above areas.

Information: https://www.auth.gr/directorate/admin-gddy/admin-dsam/cso/

ERASMUS+ & MOBILITY

The Erasmus+ program is an initiative of the European Commission that aims to enhance skills, employability and modernize education in all areas of Lifelong Learning. Within its framework, students of all study cycles of the Aristotle University of Thessaloniki can carry out:
• part of their studies in another European country **(3–12 months or 5–30 days for short-term mobility),**
• internship abroad (2–12 months).
The total duration of mobility can reach up to **12 months per study cycle**, with the possibility of financial support.

The program offers valuable international experience and contributes to the improvement of linguistic and social skills. Basic conditions for participation are good academic performance and sufficient knowledge of the language of instruction.
Applications are usually submitted at the beginning of the spring semester through the School of European Programs, while special mixed mobility programs (BIP) are announced on a case-by-case basis by the individual Schools.

Information: https://www.physics.auth.gr/spoudes/erasmus-kinitikotita/

INTERNAL MOBILITY PROGRAM

According to the Ministerial Decree 48880/Z1/2-5-2023 regarding the "Internal mobility program between first-cycle study programs of Higher Education Institutions (HEIs)" (Government Gazette 2904/2-5-2023), students who have enrolled in first-cycle study programs of a School (School of origin) and have not exceeded the minimum attendance limit, as specified in the decision establishing the study program, may submit an application to attend courses or educational activities of a first-cycle study program of a School of another HEI in the country (Host School).

Mobility may be carried out towards similar or non-similar study programs of Schools of other HEIs. and the duration of study is one (1) academic semester.

During their study in the program of study of the host School, students have all the rights and obligations of students of the host University and are entitled to be evaluated in the courses and educational activities in accordance with the Internal Regulation of the Host Institution and the Internal Regulation of the program.

The School of Physics accepts students from similar Study Programs (Schools of Science, Polytechnics, etc.)

If the study program of the receiving School is similar to the study program of the School of origin, the total number of credit units (ECTS) corresponding to courses and educational activities in which the student was successfully assessed is mandatory, provided that he/she has not already been successfully assessed in the same or corresponding courses or educational activities by the School. If the curriculum of the receiving School is not similar to the curriculum of the student's home School, the successful evaluation of courses and educational activities of the academic semester for which the application for attendance was submitted may be included in the award of the degree and the **total credit units (ECTS)** that they yield may be counted by decision of the Assembly of the home School, until the percentage is completed in accordance with the legislation.

By decision of the School Assembly, upon request of the student, the counting of credit units for the award of a degree is approved or rejected, which either concern courses or educational activities of a similar curriculum for which the student has already been evaluated at the home University. The courses and educational activities for which the student has been successfully assessed within the framework of the mobility program and are not counted towards the degree, as well as the number of their credit units, are mandatorily listed in the diploma supplement.

The right to mobility may be exercised once (1) until the completion of the first-cycle study program and the award of the degree by the home university.

Students who are admitted to first-cycle study programs after qualifying exams may apply for exemption from the obligation to attend and successfully assess courses or educational activities of the study program in which they were successfully assessed within the framework of the internal mobility program, regardless of whether they were counted towards the degree. By decision of the School

Assembly, upon request of the student, the courses and educational activities of the curriculum from which he/she is exempted from the obligation of attendance and successful evaluation are determined.

For each first-cycle curriculum, the maximum number of students admitted to the internal mobility program per academic semester is set at **ten percent (10%)** of the total number of admissions, as applicable each academic year. By decision of the Minister of Education, Religious Affairs and Sports, the maximum number herein may be changed.

Information: https://www.physics.auth.gr/spoudes/erasmus-kinitikotita/

BENEFITS

Information on all benefits for students of the Aristotle University of Thessaloniki is available on the website: https://www.auth.gr/services/