



Program: **Applied Physics**

Degree offered: **M.Sc.**

## STUDY PLAN

- This plan confirms to the regulations of the general frame of the M.Sc. programs at Al-Balqa Applied University.
- The student can follow one of two routes:
  - Applied Nuclear Physics.
  - Materials Science.
- Students holding the Bachelor degree in Physics or Nuclear Engineering are allowed for admission in both routes, while students holding the Bachelor degree in Materials Science are allowed to proceed only in the Materials Science route.
- The program consists of two tracks:
  - Thesis Track.
  - Non-Thesis Track (with comprehensive exam).
- The plan consists of (36) credit hours distributed as follows:

Thesis Track	Credit Hours
▪ <i>Compulsory courses</i>	18
▪ <i>Elective courses</i>	9
▪ <i>Thesis</i>	9
<b>Total</b>	<b>36</b>
Non-Thesis Track	Credit Hours
▪ <i>Compulsory courses</i>	24
▪ <i>Elective courses</i>	12
▪ <i>Comprehensive exam (in the specified route)</i>	-
<b>Total</b>	<b>36</b>



## Applied Nuclear Physics

### Thesis Track (36 credit hours)

Course No.	Course	Credit hours	Class	Lab	Prerequisites
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#### **a) Compulsory courses** (18 credit hours)

501503712	Advanced Mathematical Physics	3	3	-	-
501503711	Advanced Classical Mechanics	3	3	-	-
501503731	Classical Electrodynamics	3	3	-	-
501503751	Advanced Quantum Mechanics	3	3	-	-
501503761	Advanced Statistical Mechanics	3	3	-	-
501503701	Computational Physics	2	1	4	-
501503792	Research Project in Nuclear Science	1	-	-	-

#### **b) Elective courses** 9 credit hours elected from the following:

501503742	Nuclear and Radiation Physics	3	3	-	-
501503743	Theoretical Nuclear Physics	3	3	-	501503751, 501503742
501503744	Experimental Techniques in Nuclear Physics	3	2	4	501503742
501503746	Accelerator Physics	3	3	-	501503731, 501503742
501503747	Nuclear Reactors	3	3	-	501503761, 501503742
501503745	Medical Physics	3	3	-	501503742
501503749	Special Topics in Nuclear Science	3	3	-	501503742

#### **c) 501503799 Thesis** (9 credit hours)



## Applied Nuclear Physics

### Non-Thesis Track (36 credit hours)

Course No.	Course	Credit hours	Class	Lab	Prerequisites
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#### **a) Compulsory courses** (24 credit hours)

501503712	Advanced Mathematical Physics	3	3	-	-
501503711	Advanced Classical Mechanics	3	3	-	-
501503731	Advanced Electrodynamics	3	3	-	-
501503751	Advanced Quantum Mechanics	3	3	-	-
501503761	Advanced Statistical Mechanics	3	3	-	-
501503742	Nuclear and Radiation Physics	3	3	-	-
501503743	Theoretical Nuclear Physics	3	3	-	501503751, 501503742
501503701	Computational Physics	2	1	4	-
501503792	Research Project in Nuclear Science	1	-	-	-

#### **b) Elective courses** 12 credit hours elected from the following:

501503744	Experimental Techniques in Nuclear Physics	3	2	4	501503742
501503745	Medical Physics	3	3	-	501503742
501503746	Accelerator Physics	3	3	-	501503731, 501503742
501503747	Nuclear Reactors	3	3	-	501503761, 501503742
501503741	Atomic and Molecular Physics	3	3	-	501503751
501503749	Special Topics in Nuclear Science	3	3	-	501503742
501503748	Particle Physics	3	3	-	501503751

#### **c) 501503797 Comprehensive Exam in Nuclear Physics** (0 credit hours)



## Materials Science

### Thesis Track (36 credit hours)

Course No.	Course	Credit hours	Class	Lab	Prerequisites
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#### **a) Compulsory courses** (18 credit hours)

501503712	Advanced Mathematical Physics	3	3	-	-
501503711	Advanced Classical Mechanics	3	3	-	-
501503731	Classical Electrodynamics	3	3	-	-
501503751	Advanced Quantum Mechanics	3	3	-	-
501503761	Advanced Statistical Mechanics	3	3	-	-
501503701	Computational Physics	2	1	4	-
501503793	Research Project in Materials Science	1	-	-	-

#### **b) Elective courses** 9 credit hours elected from the following:

501503781	Solid State Physics	3	3	-	-
501503782	Condensed Matter Physics	3	3	-	501503781
501503742	Nuclear and Radiation Physics	3	3	-	-
501503783	Advanced Polymers	3	3	-	501503782
501503784	Advanced Semiconductor Physics	3	3	-	501503781
501503785	Experimental Techniques in Materials Science	3	2	4	501503782
501503789	Special Topics in Materials Science	3	3	-	501503781

#### **c) 501503799 Thesis** (9 credit hours)



## Materials Science

### Non-Thesis Track (36 credit hours)

Course No.	Course	Credit hours	Class	Lab	Prerequisites
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#### **a) Compulsory courses** (24 credit hours)

501503712	Advanced Mathematical Physics	3	3	-	-
501503711	Advanced Classical Mechanics	3	3	-	-
501503731	Advanced Electrodynamics	3	3	-	-
501503751	Advanced Quantum Mechanics	3	3	-	-
501503761	Advanced Statistical Mechanics	3	3	-	-
501503781	Solid State Physics	3	3	-	-
501503782	Condensed Matter Physics	3	3	-	501503781
501503701	Computational Physics	2	1	4	-
501503793	Research Project in Materials Science	1	-	-	-

#### **b) Elective courses** 12 credit hours elected from the following:

501503783	Advanced Polymers	3	3	-	501503782
501503784	Advanced Semiconductor Physics	3	3	-	501503781
501503742	Nuclear and Radiation Physics	3	3	-	-
501503789	Special Topics in Materials Science	3	3	-	501503781
501503785	Experimental Techniques in Materials Science	3	2	4	501503782
501503741	Atomic and Molecular Physics	3	3	-	501503751

#### **c) 501503798 Comprehensive Exam in Materials Science** (0 credit hours)