



Program Specifications (Postgraduate Degree)

Program Name: Master in Physics - Materials Physics Track
Qualification Level: 7
Department: Physics
College: Science
Institution: University of Tabuk

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A. Program Identification and General Information

1. Program Main Location:		
Main Campus, University of Tabuk (male and female)		
2. Branches Offering the Program:		
None		
3. Reasons for Establishing the Program: (Economic, social, cultural, and technological reasons, and national needs and development, etc.)		
•To meet the demand for qualified physicists in scientific research, education, and all industrial fields. •To contribute to the ongoing developments of the basic science field. •To provide the community with skilled and qualified manpower. •To contribute in solving national and local community problems through scientific research.		
4. System of Study		
☐ Coursework & Thesis ☒ Coursework		
5. Mode of Study		
☒ On Campus ☐ Distance Education ☐ Others		
6. Educational and Research Partnerships (if any)		
Not Applicable		
7. Total Credit Hours for Completing the Program: (48)		
8. Professional Occupations/Jobs:		
• Physicist - (21110102) • Measurement and evaluation specialist (235105) • Specifications, standards and quality specialist (242122) • Geophysicist (211402) • Lecturer - (23100102) • Director of educational supervision (134511) • Director of a weather forecasting and environmental monitoring station (134906) • Practicing Vocational Trainer - (23200103) • Expert Teacher - (23300104)		
9. Major Tracks/Pathways (if any):		
Major Track/Pathway	Credit Hours (For each track)	Professional Occupations/Jobs (For each track)
1. Materials Physics	48	As listed in item 8
10. Intermediate Exit Points/Awarded Degree (if any):		
Intermediate Exit Points/Awarded Degree	Credit Hours	
1. None		

B. Mission, Goals, and Learning Outcomes

1. Program Mission:
Preparing qualified human cadres with high-quality education and research expertise in the field of materials physics in order to promote the goals of sustainable development in the Kingdom of Saudi Arabia.

2. Program Goals:	
1. To provide a postgraduate level of scientific knowledge and practical skills in Materials Physics. 2. To equip graduates with the mathematical methods and the necessary computational skills. 3. To prepare students to conduct a proper and insightful scientific research in the respective field. 4. To upgrade the executive, educational and research activities of the students that contributes to serving the local community. 5. Qualifying and training the academic and administrative staff. 6. To meet the job market demand for qualified and skilled manpower.	
3. Relationship between Program Mission and Goals and the Mission and Goals of the Institution/College.	
There is a close correlation between the mission and the goals of both Tabuk University, the college, and the Physics department where this program provides high-quality education to prepare outstanding distinguished post-graduates in Materials Physics to comply with the needs of the job market in the country and to enable them for research and development.	
4. Graduate Attributes:	
Excellent cognitive information in Material physics Professionally skilled Successful leaders with excellent teamwork skills. Graduates are creative and innovative, and active scientific researcher.	
5. Program Learning Outcomes*	
Knowledge and Understanding	
K1	Describe the laws, principles and phenomena of basic and advanced materials physics.
K2	Recognize mathematical and computational materials physics tools.
K3	Identify material physics experiments and analyze errors and results.
Skills	
S1	Apply material physics laws to solve problems efficiently and effectively.
S2	Analyze analytical and computational tools to solve problems in materials physics.
S3	Evaluate theoretical knowledge in material physics and link it to practical solutions.
S4	Create research experiments in materials Physics, analyze and interpret results, and write reports.
Values	
V1	Adhere to professional ethics, responsibilities, and codes of experimental practice for materials physics.
V2	Communicate efficiently in academic institutions and research team.

* Add a table for each track or Exit Points/Awarded Degree (if any)

C. Curriculum

1. Study Plan Structure

Program Structure		No. of Courses	Credit Hours	Percentage
Course	Required	12	36	75 %
	Elective	3	9	18.75 %
Graduation Project (if any)		1	3	6.25 %
Thesis (if any)				
Field Experience(if any)				
Others (.....)				
Total		16	48	100%

* Add a table for each track (if any)

2. Program Courses:

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours
Level 1	PHYS501	Advanced Condensed Matter Physics	Required	Dep. Approval	3
	MATH502	Mathematical analysis	Required	Dep. Approval	3
	PHYS503	Advanced Quantum Mechanics	Required	Dep. Approval	3
	PHYS504	Computational Material Physics	Required	Dep. Approval	3
Level 2	PHYS505	Experimental methods in physics	Required	Dep. Approval	3
	PHYS506	Materials properties	Required	PHYS501	3
	PHYS507	Polymer and soft materials	Required	Dep. Approval	3
	PHYS508	Seminar	Required	Dep. Approval	3
Level 3	PHYS509	Thin film materials & technology	Required	PHYS506	3
	PHYS510	Research project	Required	Dep. Approval	3
	PHYS511	Advanced Material physics	Required	PHYS506	3
	PHYS5xx	Elective course 1	Elective	Dep. Approval	3
Level 4	PHYS512	Advanced semiconductors	Required	PHYS511	3
	PHYS513	Nanomaterials & Nanotechnology	Required	Dep. Approval	3
	PHYS5xx	Elective course 2	Elective	Dep. Approval	3
	PHYS5xx	Elective course 3	Elective	Dep. Approval	3
Elective Courses	PHYS514	Special topics in Material physics	Elective	Dep. Approval	3
	PHYS515	Electrodynamics	Elective	Dep. Approval	3
	PHYS516	Advanced optics	Elective	Dep. Approval	3
	PHYS517	Experimental Plasma physics	Elective	Dep. Approval	3
	PHYS518	Physical Metallurgy	Elective	Dep. Approval	3
	PHYS519	Composites	Elective	PHYS506	3
	PHYS520	Glass and Ceramics	Elective	PHYS506	3
	STAT520	Advanced statistical Mechanics	Elective	Dep. Approval	3

* Include additional levels if needed

** Add a table for each track (if any)

3. Course Specifications

Insert hyperlink for all course specifications using NCAAA template

4. Program learning Outcomes Mapping Matrix

Align the program learning outcomes with program courses, according to the following desired levels of performance
(I = Introduced P = Practiced M = Mastered)

Course code & No.	Program Learning Outcomes										
	Knowledge and understanding				Skills				Values		
	K1	K2	K3	K4	S1	S2	S3	S4	V1	V2	V3
PHYS601		I		I	I		P		P		I
MATH602	I		P		P		P		I	P	
PHYS603	P	I			P	I					P
PHYS604	P	I	P	I		P	I	I	P	P	P
PHYS605				M				M	M	M	M
PHYS606	I	P		P	P	P		P		P	
PHYS607	P	P	M		P	P		P	P	P	P
PHYS608	I	P			P		P		P	P	P
PHYS609	M	M	M	M	M	M	M	M	M	M	M
PHYS610		M	P	M	M	M	I	M		M	
PHYS611	M	M		M	M		M	M	M		M
PHYS612	P	P	P		P	P			P	P	
PHYS613	I	P		P	P	P		P		P	
PHYS614	P		P		P	P	P		P	P	P
PHYS615	I	P		P	P	P		P		P	I
PHYS616		M	M			M		M	M	M	M
PHYS617	M			M		M		M	P	P	P
PHYS618	P	I			P	I					P
PHYS619	I	P		P	P	P		P		P	
PHYS620	I	P		P	P	P		P		P	I

* Add a table for each track (if any)

5. Teaching and Learning Strategies to Achieve Program Learning Outcomes

Describe policies, teaching and learning strategies, learning experience, and learning activities, including curricular and extra-curricular activities, to achieve the program learning outcomes.

- 1- Promote and develop a respectful and encouraging environment.
- 2- Appropriate use of Summative and Formative Assessments
- 3- Effective Questioning Techniques and deliberate practice
- 4- Differentiation and reinforcing effort/providing recognition
- 5- Metacognition, personalized learning and collaborative learning
- 6- Teach thinking skills and problem-solving techniques.
- 7- Modelling and Scaffolding
- 8- Use of education technology and visualization
- 9- Feedback process and understanding
- 10-active learning strategies

6. Assessment Methods for Program Learning Outcomes.

Describe assessment methods (Direct and Indirect) that can be used to measure achievement of program learning outcomes in every domain of learning.

NQF Learning Domains and Learning Outcomes		Assessment Methods
Knowledge and Understanding		
K1	Describe the laws, principles and phenomena of basic and advanced materials physics.	Written Exams-Class Discussion-Survey
K2	Recognize mathematical and computational materials physics tools.	Written Exams-Class Discussion-Survey
K3	Identify material physics experiments and analyze errors and results.	Written Exams-Class Discussion-Project-Report
Skills		
S1	Apply material physics laws to solve problems efficiently and effectively.	Written Exams-Class Discussion-Project-Report
S2	Analyze analytical and computational tools to solve problems in materials physics.	Written Exams-Class Discussion-Project-Report
S3	Evaluate theoretical knowledge in material physics and link it to practical solutions.	Written Exams-Class Discussion-Project-Report
S4	Create research experiments in materials Physics, analyze and interpret results, and write reports.	Group project- presentation-Report-Survey
Values		
V1	Adhere to professional ethics, responsibilities, and codes of experimental practice for materials physics.	Project- Written exam-report-Survey
V2	Communicate efficiently in academic institutions and research team.	Group project-Presentation-Research Paper-Survey

D. Thesis and Its Requirements (if any)

1. Registration of the thesis: (Requirements/conditions and procedures for registration of the thesis as well as controls, responsibilities and procedures of scientific guidance)
Not Applicable
2. Scientific Supervision: (The regulations of the selection of the scientific supervisor and his/her responsibilities, as well as the procedures/mechanisms of the scientific supervision and follow-up)
Not Applicable
3. Thesis Defense/Examination: (The regulations for selection of the defense/examination committee and the requirements to proceed for thesis defense, the procedures for defense and approval of the thesis, and criteria for evaluation of the thesis)
Not Applicable

E. Student Admission and Support:

1. Student Admission and Transfer Requirements, and Courses Equivalency
Candidate's admission to the master's program in Materials Physics will be purely on merit basis, taking into consideration the following points: - The candidate should hold a bachelor degree in physics and others fields as mentioned in the following table. - The candidate should have a minimum GPA of (3.75/5).

- The candidate may have to go through a personal interview (if required), depending on the number of applicants.
- The candidate should have at least (350 points for TOEFL) and (3.5 points on IELTS) OR equivalent
- Employed consent is needed to enroll for the program (if required)?
- Students with Saudi and Non-Saudi citizenship can enroll for this program

The following table summarize student admission requirement at the department level:

	Required Bachelor in	Physics
	Required GPA	Good (2.75/5)
	Interview	Required, depending on the number of applicants
	Written Test	
	English Test (TOFL, IELTS)	TOEFL: 350, IELTS: 3.5 or equivalent
	Employer Consent to enroll in the program	No
	Who can apply?	Saudi Citizens and Non-Saudi Citizens (Non-Saudi students not to exceed 30%)

2. Student Counseling Services

(academic, career, psychological and social)

- Student Academic Counseling Committee is in charge of student counseling.
- A faculty member is assigned as a group adviser. The adviser is responsible of:
 - Provide career guidance for students.
 - To inform students of the faculty and University's policies
 - To monitor students' performance.
 - To conduct orientation sessions.
 - To inform the students of available resources (library, classrooms, labs, etc.)
- Each course instructor has definite office hours to be available for student counseling. Office hours' schedule are posted on the course website.

3. Special Support

(low achievers, disabled, gifted and talented)

The Postgraduate committee at the department is aware of the needs of students with a disability and students with a learning difficulty.

Support provided by the college can include:

- accommodation adapted for the needs of students with disabilities
- professional care staff
- help from volunteers

There are many things universities can do to help students with disabilities, including:

- making sure buildings and facilities are accessible

- encouraging flexible teaching methods
- providing support during exams
- allowing additional time to complete courses

Gifted and talented students are highly and fully supported by the department and accordingly are given challenging tasks to meet their intellectual levels. Department is fully equipped and ready to properly handle their affairs.

F. Teaching and Administrative Staff

1. Needed Teaching and Administrative Staff

Academic Rank	Specialty		Special Requirements / Skills (if any)	Required Numbers		
	General	Specific		M	F	T
Professors	Physics	Materials Physics, condensed matter. Nanotechnology, solid state Physics and experimental Physics.	NA	2	2	4
Associate Professors	Physics	Materials Physics, condensed matter. Nanotechnology, solid state Physics and experimental Physics.	NA	2	2	4
Assistant Professors	Physics	Materials Physics, condensed matter. Nanotechnology, solid state Physics and experimental Physics.	NA	2	2	4
Technicians and Laboratory Assistants	Physics	General.	NA	1	1	2
Administrative and Supportive Staff	Physics	General	NA	1	1	2
Others (Associate Professors)	Mathematics	Mathematical analysis	NA	1	1	2
Others (Associate Professors)	Statistics	Statistical Mechanics	NA	1	1	2

2. Professional Development

2.1 Orientation for New Teaching Staff

Describe briefly the process used for orientation of new, visiting and part-time teaching staff

New teaching staff joined at the department will be given hands on training on the following issues:

- Training sessions and orientation programs by experienced teachers
- To make them aware about rules and regulations
- To train them about assessment methods

Using a faculty handbook that introduces all university rules and regulations.
2.2 Professional Development for Teaching Staff Describe briefly the plan and arrangements for academic and professional development of teaching staff (e.g., teaching & learning strategies, learning outcomes assessment, professional development, etc.)
- Organizing regular workshops for faculty members in all fields (Teaching, Quality assurance, Development, ...etc.) - Course Coordinators meet regularly to discuss all course related matters. - Faculty members attend specialized training courses in the teaching and learning strategies. - Feedback from Student surveys and Student Course evaluation reports are used for professionally development.

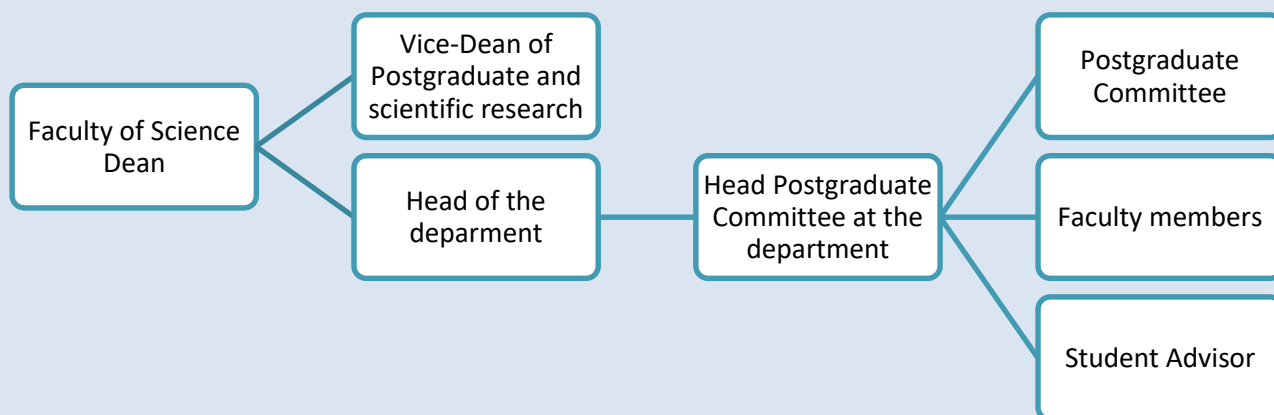
G. Learning Resources, Facilities, and Equipment

1. Learning Resources. Policies and Procedure for providing and quality assurance of learning resources (textbooks, references and other resource materials, including electronic and web-based resources, etc.)
Department of Physics provides the students with the best possible and latest technological resources to go through this course. Major facilities provided will be as follows: • Smart classrooms • Fully developed library • Access to e-resources • Access to electronic materials Study material prepared by faculty members
2. Facilities and Equipment Policies and Procedure for providing and quality assurance of Facilities and Equipment (Library, laboratories, medical facilities, classrooms, etc.).
Department of Physics is committed to provide following facilities • Well-equipped and fully furnished laboratories for teaching and Research • Decent classrooms • Library in the Department • WIFI everywhere in the University
3. Arrangements to Maintain a Healthy and Safe Environment (According to the nature of the program)
-The Department of Physics is committed to provide a safe, healthy, and hygienic environment to all the students. -The Department of Physics cooperates with the safety division at the University of Tabuk. - Safety measurements in Laboratories: Hand Sensitizers, Masks, Gloves, and all laboratory related requirements. - Safety measurements in classrooms: Hand Sensitizers, Masks, fire extinguisher, ... etc.

H. Program Management and Regulations

1. Program Management 1.1 Program Structure
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(including boards, councils, units, committees, etc.)



The master program in Materials Physics is headed by the Head of the department, and its organizational structure will be as follows

- Dean Faculty of Science
- Vice-Dean of Postgraduate and Development
- Head of the Department
- Head of Postgraduate Committee at the department
- Postgraduate Committee (members)
- Student Advisors
- Faculty Members

1.2 Stakeholders' Involvement

Describe the representation and involvement of stakeholders in the program planning and development. (students, professional bodies, scientific societies, alumni, employers, etc.)

We would like to involve as stakeholders towards development and planning of the program as well as successful improvement in the course content on periodic basis.

From Students and graduates:

Student Advisory Committee will be created to assess and evaluate the quality of academic and administrative procedures. Each member of the committee is a "Student Representative". The committee members are elected by students and program instructors by a voting process via ballot. A Student Representative communicates among the students and the Student Advisory Committee. Among the procedures to collect student's views, other than direct communication, is to distribute questionnaires to obtain effective feedback on the curriculum, administrative processes, and on the program in general. The committee is in direct contact with the Postgraduate and Scientific Research Committee at the physics department which will report student's concerns to the head of the physics department and then to the faculty of science. The Student Advisory Committee can nominate a member to be a Student Representative in the "Student Advisory Committee" at the university level.

From independent advisors and/or evaluator(s)

We will organize visits of external examiners to assess the academic or administrative process of the entire program.

One of the important courses in the program's curriculum is the "SEMINAR" course, where we can invite scientists in the field of Materials Physics from all over the world to give lecture or a series of talks on topics that have not been well developed during the program.

From employers and/or other stakeholders:

Encouraging employers and government institutions to inform us of the performance of our graduates. Carrying out frequent visits to companies and government physics institutions with significant research and development experience to target the topics and skills the students need to do their job well. Involving all stakeholders from the university and from social groups in training students to adhere to rules and ethics.

2. Program Regulations

Provide a list of related program regulations, including their link to online version: admission, study and exams, recruitment, appeals and complaint regulations, etc.)

The program regulations are managed by the Vice President of scientific research and postgraduate studies at the University of Tabuk in close coordination with the Vice Deanship of scientific research and postgraduate studies at the faculty of science.

- Admission Requirements are listed at section E.1. All others admission and registration issues are managed by the deanship of admission and registration at the university, in particular, courses enrollment and withdrawal regulations.
- Courses enrollment and registration can be viewed by the students through the student account at the university electronic portal in the same way as bachelors' students do.
- Courses schedule and classrooms are managed by the scientific research and postgraduate studies committee at the physics department.
- Final exams schedule is prepared by the deanship of admission and registration while all other exams dates are managed by course instructors. Exams regulations are the same as all others programs in the university.
- Students selection and enrollment process in the program starts first by submitting an application through a portal of the deanship of postgraduate studies. Once the deadline of applications is due, the members of the scientific research and postgraduate studies at the physics department start reviewing the applications to select the best students to enroll in the program.
- Appeals and complain regulations are the same as those for other programs and are managed by the Vice-President office of academic affairs that can be found in their website.

I. Program Quality Assurance

1. Program Quality Assurance System

Provide online link to quality assurance manual

A detailed quality assurance guideline is available at the deanship of quality assurance at the University of Tabuk.

2. Program Quality Monitoring Procedures

The University of Tabuk is committed to high quality standards of education. The University has an established quality assurance department in place to assure high quality in education. This office collects all course reports, results and feedback. They analyze all the collected data and then send their recommendations to the academia for further improvements, so that the program learning outcomes and goals are accomplished.

3. Arrangements to Monitor Quality of Courses Taught by other Departments.
The department of physics will closely monitor course outcomes taught by faculty members from other departments in the same way we monitor courses taught by the faculty members within our department.
4. Arrangements Used to Ensure the Consistency between Main Campus and Branches (including male and female sections)
The departmental postgraduate committee will monitor the course contents taught at different campuses (male and female) along with the student's assessment process. The department is equipped with smart rooms with good video conferencing systems. The video system has been used well in the Bachelor of science program. Faculty members from the male campus have been teaching courses at the female campus via video links.
5. Arrangements to Apply the Institutional Regulations Governing the Educational and Research Partnerships (if any).
Not Applicable
6. Assessment Plan for Program Learning Outcomes (PLOs), and Mechanisms of Using its Results in the Development Processes
Each semester, program evaluation surveys and assessments will be conducted. It lists key performance indicators and their percentage of accomplishment, which is computed. The department therefore will analyze the deficiencies and action plans will be proposed and enforced.

7. Evaluation of Program Quality Matrix

Evaluation Areas/Aspects	Evaluation Sources/References	Evaluation Methods	Evaluation Time
effectiveness of teaching & assessment	students, graduates, alumni, faculty, program leaders	Surveys, Course Report	End of each Semester
learning resources	faculty, program leaders	Surveys, Course Report, Faculty discussion	End of each Semester
leadership	faculty, Dean office, Faculty subcommittees	Surveys, interviews, Faculty discussion	End of Academic Year
Stockholder's opinions	Students, graduates, alumni, faculty Staff, program leaders,	Stockholder's opinions	Students, graduates, alumni, faculty Staff, program leaders,

Evaluation Areas/Aspects (e.g., leadership, effectiveness of teaching & assessment, learning resources, partnerships, etc.)

Evaluation Sources (students, graduates, alumni, faculty, program leaders, administrative staff, employers, independent reviewers, and others (specify)

Evaluation Methods (e.g., Surveys, interviews, visits, etc.)

Evaluation Time (e.g., beginning of semesters, end of academic year, etc.)

8. Program KPIs*

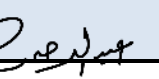
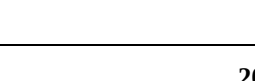
The period to achieve the target (2) year.

No	KPIs Code	KPIs	Target	Measurement Methods	Measurement Time
1	KPI-PG-1	Percentage of achieved indicators of the program operational plan objectives	70%	Program Operational Plan	End of Academic year
2	KPI-PG-2	Students' Evaluation of quality of learning experience in the program	70%	Surveys	The End of each Semester
3	KPI- PG-3	Students' evaluation of the quality of the courses	4.5	Surveys	End of Semester

No	KPIs Code	KPIs	Target	Measurement Methods	Measurement Time
4	KPI-PG-4	Students' evaluation of the quality of scientific supervision	4.5	Surveys	End of Semester
5	KPI-PG-5	Average time for students' graduation	2 years	Reports from college vice-dean for academic affairs	End of Academic Year
6	KPI-PG-6	Rate of students dropping out of the program	10%	Reports from college vice-dean for academic affairs	End of Academic Year
7	KPI-PG-7	Graduates' employability	80%	Reports from college vice-dean for academic affairs	End of Academic Year
8	KPI-PG-8	Employers' evaluation of the program graduates' competency	60%	Surveys	End of Semester
9	KPI-PG-9	Students' satisfaction with the provided services	75%	Surveys	End of Semester
10	KPI-PG-10	Ratio of students to faculty members	2:1	Reports from Deanship of Teaching Staff Affairs	End of Academic Year
11	KPI-PG-11	Percentage of faculty members' distribution based on academic ranking	Prof.: 20% Associate 20% Assistant 60%	Reports from Deanship of Teaching Staff affairs	End of Academic Year
12	KPI-PG-12	Proportion of faculty members leaving the program	10%	Reports from Deanship of Teaching Staff Affairs	End of Academic Year
13	KPI-PG-13	Satisfaction of beneficiaries with learning resources	80%	Surveys	End of Academic Year
14	KPI-PG-14	Satisfaction of beneficiaries with research facilities and equipment	80%	Surveys	End of Academic Year
15	KPI-PG-15	Percentage of publications of faculty members	90%	Reports from college vice-dean for graduate studies and scientific research	End of Academic Year
16	KPI-PG-16	Rate of published research per faculty member	1:1	Reports from Scientific Research Unit	End of Academic Year
17	KPI-PG-17	Citations rate in refereed journals per faculty member	20%	Reports from college vice-dean for graduate studies and scientific research	End of Academic Year
18	KPI-PG-18	Percentage of students' publication	20%	Reports from college vice-dean for graduate studies and scientific research	End of Academic Year
19	KPI-PG-19	Number of patents, innovative products, and awards of excellence	5%	Reports from college vice-dean for graduate studies and scientific research	End of Academic Year

* including KPIs required by NCAAA

j. Specification Approval Authority

Council / Committee		ا. د. طه عبد المجيد حنفي محمود
		ا. د. تيمور احمد حمد الله
		د. با بكر عثمان البشير
		د. سيد قاسم سيد الطف
		د. محمد رشاد شحاته
		د. محمد صادق روزاب
		د. عبدالرحمن مبارك الشراري
Reference No.		
Date	20/05/2022	

رئيس قسم الفيزياء



د. عبدالرحمن مبارك الشراري