

## **1. About the Department**

### **Establishment**

The Physics Department at the University of Jazan was established in 2006 (1426 H) with the objective to provide its students with a rigorous and competitive education and training to meet the needs of society, and contribute to the development of our beloved country in today's scientific and technical era in various sectors such as education, industry, environment, technology, telecommunications and others, which require a well-trained and qualified generation.

The Department offers a Bachelor of Science degree in physics with a focus on the fundamental concepts and applications in various fields of physics. The Department curriculum also includes training of students on research skills by integrating the fundamental concepts in their research projects under the supervision of the faculty.

In addition, the Physics Department provides opportunities for its successful graduates to continue their research in prestigious international universities under the supervision of the faculty jointly with the faculty in those international universities for projects. Furthermore, the Department has a future plan for post-graduate studies in master's and doctorate degrees.

The Physics Department in Jazan University has currently more than 300 students, and annually accepts around 100 new students. The Department has over 35 faculty members from different countries in different disciplines of physics. The faculty also carries scientific research within their groups, in addition to their teaching responsibilities.

### **Vision**

The Department strives to provide the best state of education and training in physics to develop students' skills and abilities to be up to par with the new developments in science and technology, and contribute to find solutions for societal and environmental challenges.

### **Mission**

The mission of the Department is to improve the educational process and provide programs to keep pace with global developments, and to graduate students with a high degree of efficiency, competitiveness, and capability to contribute effectively to meet the needs of development plans in the Kingdom.

### **Goals**

- To teach general and specialized courses in various branches of physics
- To develop students' abilities to find solution to problems following the scientific method.
- To cultivate in students a spirit of scientific research and innovation.
- To prepare students to pursue their graduate studies in national and international universities.
- To support programs and development plans in the Kingdom, and participate to solve scientific and industrial problems.
- To form a tradition of successful collaborative scientific research with national and international physics departments.

### **Degrees Offered**

Students will graduate with a Bachelor of Science in physics after they complete 130 credit hours, God willing.

### **Why we need physics?**

Physics is a science that deals with natural phenomena, which one encounters in the laboratory, at home, in the factory, in the sea, in the atmosphere, and simply in everything around us, including the technologies that immensely improve our standard of living. Among the latter are: transistor radios, computers, cell phones, lasers, X-rays, magnetic resonance imaging (MRI) etc. Simply put, the technology we have around us today would be impossible, had it not been for the success of physics.

Physics is the most fundamental science, therefore, understanding natural phenomena starts first by understanding the physical principles behind them.

### **Job Opportunities**

The Department gives its students rigorous and extensive training covering all disciplines of physics, which in turn equips them with greater career opportunities. Among these opportunities are:

- To pursue graduate studies in the best universities in the world.
- To do research
- To work in private tech-based companies such as Aramco, Sabiq, Economical City, and Industrial City.
- To teach in government schools and others.

## **2. General Information**

### **Location**

The Department of Physics is located in the Science Faculty at Jazan University besides the Red Sea coast, on the north of the city of Jazan. The department building consists of three floors: the first floor houses teaching labs, the second floor houses teaching classrooms, and the third floor houses the offices of the faculty and staff.

### **Library**

The library is located in the third floor of the Faculty of Science building. It contains a good number of scientific books, electronic resources, references, and study rooms equipped with computers with the Internet access.

In addition to the above-mentioned library, the Jazan University also has a central library, which contains a multitude of specialized books, and electronic resources on science. The latter can be accessed through the central library website. For more information, please contact the Physics Department secretary.

### **Laboratories**

The Department contains many teaching and research laboratories: general physics laboratory, mechanics and thermodynamics laboratory, and electric laboratory, electronics laboratory, optics laboratory, modern and atomic physics laboratory, solid state laboratory, and nuclear physics laboratory. All the laboratories are equipped with modern equipment.

### **Computer Facilities**

The Department has a computer lab with the Internet access available for student use in their research, report writing, and projects required for their graduation.

### **Practical Lab Sessions**

Some courses are both theoretical and experimental. For the experimental portion of such a course, students are expected to attend various lab sessions. The attendance for such sessions is obligatory. A student who misses a lab session will automatically be counted as absent in the theoretical session. In addition, the grades in the lab session will be added to the theoretical part. A practical lab session is essential and integral to the theoretical part of a course. The Physics Department is very strict when it comes to student attendance in both theoretical and lab sessions.

### **Office Hours**

Office hours are an important means of communication between students and professors to solve any problems that students might have in their coursework or other academic matters. The Department expects each teaching faculty member to allocate 10 hours per week for office hours. The Department encourages all its students to take advantage of office-hour sessions for any advice and/or assistance they might need.

### **Attendance Policy**

The regular lectures and lab sessions are supposed be venues in which a faculty member transfers his knowledge and know-how to students. Therefore, if a student misses class, he will lag behind the course material, and this might cause him to do poorly in the exams.

The students are also recommended not to come to class after the class starts, because this will cause confusion and inconvenience to the instructor. It is the responsibility of professor to check late-comings, and not allow students to make them into a habit without any warranted excuse.

According to the rules of the university, the absence of a student must not exceed 25% of the total number of classes in a semester; otherwise the student might be denied to take the final exam.

The Physics Department emphasizes the need for students to attend classes regularly, except, of course, for extenuating circumstances, for which he must produce documentation. For more information on this, please refer to the Rules and Regulations of the university.

### **Tutorials/recitations/problem solving sessions**

Given the importance of problem solving in physics, the department has allocated obligatory hours of problem-solving session for students. Especially, for courses that require substantial amount of mathematics: General Physics, Waves and Vibrations, Mathematical Physics, Classical Mechanics, Analytical Mechanics, and Electrodynamics.

In these sessions, which will be held one hour per week, general and homework-assignment problems will be worked out.

A teaching assistant (TA) will conduct these sessions, and the responsible faculty member will supervise them.

The department stresses the importance of attending problem-solving sessions, which are essential and required part of a course, and as such attendance will be taken.

### **Seminars and colloquia**

The Physics Department organizes weekly meetings and seminars on Tuesdays between 11:00am-12:00pm in the seminar room located in the third floor of the Faculty of Science. These seminars will be conducted by researchers from our department or abroad.

The department encourages students to attend these seminars and participate in scientific discussions.

## **Department Meetings**

### **Department Routine Meeting (RM)**

The Physics Department organizes regular departmental meetings in which various issues are discussed. Among them are general logistics problems, teaching-related and student issues.

### **Department Review Meeting (DRM)**

The Department Review Meetings are held at the end of each month. The attendance of all faculty members is required at these meetings. The aim of DRMs is to review the general policy of the Physics Department in science education and research. Among the subjects discussed at these meetings are:

- (1) The policy of the department and its future plans within the general vision, mission, and plans of the university.
- (2) Updating the vision, mission, and objectives of the department based on modern developments.
- (3) The policy of the Department on education and teaching methods employed by the Department under the guidelines of the Physics Education Committee.
- (4) Development of the process of science education to achieve the university objectives.
- (5) Review of the efforts of the Department on development and quality within the relevant standards of the university.
- (6) How to establish a cutting edge research program in the Physics Department, that will in turn benefit the Kingdom.

## **Staff room**

The Department has a staff room for faculty members overlooking the Red Sea, where professors can drink a cup of tea or coffee and relax with other faculty members.

## **Student room**

The Department also has a room for students in the second floor of the Science building where they can meet other students, relax, and have scientific conversations.

### **3. Research experience for undergraduates at Jazan University/REU**

The Physics Department places great importance on undergraduate research, which is a good opportunity for students to develop good research skills and prepare them for their careers. In this project, they will also learn how to work in a group setting and interact with their peers and advisors. To this end, our students are required to choose a research project in consultation with their faculty project advisor (their supervisor). In these projects students interact with their advisors closely, and learn how to design a project in a given research topic, which involves forming an hypothesis, carrying out experiments and data collection, interpretation of results, and conclusion. At the end of research project, student is supposed to present his work before a faculty committee, which will evaluate the quality of the project and the presentation.

Distinguished student projects will be encouraged and supported to participate in the annual national undergraduate research conference organized by Ministry of Higher Education. The conference is attended by a large number of students from various universities and different disciplines from all around the Kingdom. In the past, two of our students attended this conference held in Jeddah city in 1432H. Moreover, the Physics Department will also support the participation of students with distinguished projects in international conferences and in summer schools. The latter is a valuable and transformative experience for students to further their understanding of the scientific method and imagination, and meet students from other nationalities. In the past, some of our students also participated in a summer school held in Switzerland in the summer of 1431H organized by European Center for Nuclear and Particle Physics (CERN).

The research project consists of several stages:

#### **1. Registration in the project**

Senior students who have completed their requirements for six levels and succeeded in specialized basic courses such as Solid State Physics, Nuclear Physics, Quantum Mechanics, and other courses determined by the department have to register for this projects course, which must be approved by the department head.

#### **2. Selecting the Research Project**

The faculty will determine a set of research projects and topics, which will be announced in the first week of classes. A sample project will be available for students' examination. Two students will work on a chosen project together under the supervision of the relevant faculty.

#### **3. Completion of the Research Project**

Students are expected to work on their project throughout the semester with their supervisor, who will provide them with references and research papers on their topic. The

supervisor will allocate the research task among the students. If needed, the supervisor will deliver a series of lectures to initiate them to the subject matter and provide them with the scientific background. During the semester supervisors will follow up their students' work periodically.

#### 4. The Project Presentations

At the end of the semester, students are expected to submit a project report to their supervisors before its deadline. The project committee will determine the date of presentations. The duration of each presentation is 30 minutes, during which time students will present their work to an audience consisting of both faculty and students. In addition to any potential questions from the audience, the committee members will ask students questions.

This is a great opportunity for students to practice their scientific presentation skills before an audience.

#### 5. Award for the Best Project

To encourage students to excel in their projects, and for a fair competition, the department has established an award for the best student project. Furthermore, distinguished projects will be nominated for participation in competitions inside or outside the Kingdom.