

## STUDENT GUIDE TO UNIVERSITY LIFE

### Assalamu Alikum Warahmatu Allah Wabarakatu

On behalf of me and all the staff of Majmaah University, I would like to welcome you in the e-portal of Majmaah University. It is well known that Higher Education institutions are deemed as the beacon of knowledge & enlightenment for entering the arena of research and development. The existence of Higher Education institutions also reflect the serious concern of government about the quality of education provided to their peoples.

Rector Dr.

*Khalid bin Saad Al Muqrin*

Rector of Majmaah university



The Custodian of the Two Holy Mosques, King Abdullah Bin Abdul Aziz & His Crown Prince shall spare no efforts in overcoming any obstacle that may obstruct the educational process in the country

We are confident that Majmaah University shall remain an edifice of knowledge that will generate well knowledgeable students who are capable to contribute with substance & value in the development of their country in all aspects of life.

The achievements of Majmaah University are attributed to the efforts being exerted by those sincere people who have been dedicated their time to make this university a well-respected one.

The directive of the Custodian of the Two Holy Mosques, King Abdullah Bin Abdul Aziz to establish the University of Majmaah, which will serve a vast number of students in the region, is also an obvious and concrete initiative from the government in supporting education.

**Wish you the best of luck**

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**Date and Establishment University**

Majmaah University slogan is comprised of three integrated parts that are based on golden ground. The golden color in the slogan represents the desert of the Kingdom of Saudi Arabia where the Islamic daua'a has started.

## Earth

The sign of earth in the slogan represents the tendency of the University to be an international renowned institution.



## Leafs of Palm

The three leafs of palm to the right side represent the three phases of the Saudi country.

The selection of palm's leaf is due to its importance as a crucial source for the nutrition and economy of people in this region. The gradation of the dark green color to the light green color refers to the knowledge that the University intends to disseminate in the region.

## Book Pages

The book pages to the left side represent the knowledge that the University intends to disseminate in the region. It also represents the future vision of the University to be a source of knowledge for all students.



### **Establishment of Majmaah University:**

The establishment of Majmaah University, came as a result of the decree of the Custodian of the Two Holy Mosques King Abdullah Bin Abdul Aziz Al-Saud and the Prime Minister and Chairman of Higher Education on Ramadan 3rd, 1430 - 24th of August, 2009 to establish Majmaah University along with three other universities in Dammam city, Kharj province and Shaqr'a province.

Majmaah University is established to serve a wide area including Majmmah, Zulfi, Remah, Ghat and Hawtat Sudair. It will also help in achieving the Ministry of Higher Education's objective in expanding the university education across the country. Therefore,

Majmaah University will meet the growing number of high school graduates in the region which will reduce the pressure on universities in big cities. Another significant reason for the establishment of Mjmaah University is the value it will add to the people of the region in various aspects including social, cultural and awareness service. Inevitably, this shall help in upgrading the level of performance appraisal of government sectors via providing advanced courses and consultations. With regard to scientific research, the University will provide programs of high quality that will be in compatible with the University strategic objectives.

The royal decree no: 194/A on Zul Hejjah 30th, 1430 – 17th of October, 2009 to appoint Dr. Khalid Sa'ad Al-Mugren as the Rector of Majmaah University with higher rank accelerated the development process at the University. Dr. Al-Mugren focused on developing the existence colleges as well as building new ones in order to increase the number of majors that will meet the market demands. The concern of Dr. Al-Mugren is to make Majmaah University a beacon of knowledge and enlightenment that is capable of offering education of high quality.

### **Vision:**

To ensure that Majmaah University is a conducive academic environment of high quality capable of providing graduates with promising future to contribute in achieving the sustainable development objectives.



**Mission:**

**Majmaah University provides educational and research services via an academic system that is capable of competing with an eye on the market demands and the society partnership.**

**Majmaah University Strategic Goals and Objectives:**

**The first strategic goal:**

Providing an academic service to a high degree of quality and accreditation, according to the requirements of national and international, for the development of university student's competitiveness in the labor market, and building community partnership

**Objectives:**

- (1) Developing students' skills and abilities and preparing them for the labor market (English Language and Computer).
- (2) Upgrading students research skills and enhancing their participation in national and international forums.
- (3) Improving programs and services of guidance and counseling in all university colleges.
- (4) Updating all the programs of student activities at the university, and increasing student participation in all activities.
- (5) Improving quality of acceptance opportunities for all students qualified for university.
- (6) Developing care programs for students with special needs in all university colleges.
- (7) Enhancing internal efficiency (students Success ratio) in all university colleges.
- (8) Increasing job opportunities for university students in private sectors and community institutions.
- (9) Increasing college's participation in local community activities.
- (10) Strengthening the partnership with community institutions in training university students and graduates.

**The second strategic goal:**

Raising the efficiency of the institutional performance and developing infrastructure and technological environment of the university in order to achieve its mission and goals



### Objectives:

- (1) Developing infrastructure, buildings and university facilities.
- (2) Establishing an integrated network of information systems and e-learning.
- 3) Developing administrative organization and procedures in colleges and deanships
- (4) Improving the system of rewards and incentives in colleges and deanships.
- (5) Developing criteria for the selection of academic and administrative leaders.
- (6) Enhancing quality of academic programs and access to local and global accreditation
- (7) Developing educational courses and programs in the light of the quality standards in all colleges of the University during the plan period.
- (8) Improving teaching, learning and evaluation methodologies for the staff members of all colleges.
- (9) Application of e-learning and distance learning programs in five colleges through the Deanship of e-learning.

### The third strategic goal:

Developing human and intellectual capacity of the University to achieve high levels of future quality and excellence in the areas of education, scientific research, and community service

### Objectives:

- (1) Improving the ratio of staff member to the student.
- (2) Increasing the proportion of faculty holding doctorates.
- (3) Saudization (increasing the ratio of Saudi academic staff members to other nationalities).
- (4) Developing the skills of staff members and administrators in the areas of professional knowledge.
- (5) Developing the capacity of staff members and administrators in the areas of technology and its modern educational and administrative applications.
- (6) Increasing the participation of staff members in the local and international conferences.
- (7) Supporting external scholarship programs, grants, training courses and scientific communication.
- (8) Achieving 80% of the total administrative staff to be Saudis.

- (9) Improving the access rates of technicians in laboratories to the proportion (1: 1).
- (10) Improving administrative staff performance, increasing their qualifications and developing their skills.
- (11) Supporting research centers and colleges with qualified experts and cadres.
- (12) Encouraging researchers to publish their research at the local, regional and international level.
- (13) Increasing research agreements with local and foreign universities.
- (14) Linking scientific research to the needs and problems of the national and international community.

### **The fourth strategic goal:**

Expansion of economic development for the University to meet the requirements of the sustainable development of the local environment

### **Objectives:**

- (1) Developing financial resources for colleges and deanships in the approved budget.
- (2) Increasing the number of parallel education programs in colleges.
- (3) Establishing post graduate programs during the plan period.
- (4) Investment of university facilities and buildings.
- (5) Developing financial plans and budgets.
- (6) Improving the rates of expenditure in the light of setting priorities.
- (7) Developing regulations, legislation and specific mechanisms for receiving the financial resources or done ships for colleges and deanships and make them available to everyone.
- (8) Stimulating business and community organizations in addition to the private sector to participate in the programs of the university.

## College Of Sciences Al-Zulfi

### Establishment of Colloege of Science:

College of Science, Al-Zulfi at Al majmaah University was established by a royal decree on 18th of Sha'ban 1426 AH, in Al qaseem. The college includes four departments: The Department of Computer Science, The Department of Mathematics, the Department of Physics and Information, and The Department of Medical Laboratories. New students are accepted in the preparatory year program of laboratory Medicine department, computer Science department, Mathematics department and Physics department



The first year is considered a preparatory year for students who want to specialize in the laboratory medicine, or computer science and information departments. The first year aims to prepare the students to receive the academic education highly, the skills of English Language, and train the students on the thinking and learning skills.

The second year is considered a preparatory year for students who want to specialize in the Physics or Mathematics Departments. The program aims to prepare the students to receive the higher academic education, train the students on teaching methodologies and acquire the skills of thinking and learning.

### Vision:

- (1) To reach scientific and research leadership in the college specialties, serving community and qualification of students in accordance to professional requirements of modern science.
- (2) To achieve leadership and excellence in building soceity of education knowledge and applied sciences through the academic and scientific programs, which enable it to be reference in providing an overall professional advice to the Saudi commuinty in accordance with standard quality standards accreditation recognized locally and globally.

- (3) Driving the wheel of development and achievement of excellence, quality, educationally, professionally and academically in light of information and knowledge economy society.

**Mission:**

**College of Science - AlZulfi provides graduates who have scientific excellence through effective plans and developed program with the skills needed to compete in the labor market.**

**Objectives:**

- (1) Providing an outstanding education in an integrated learning environment to contribute in preparation and training of human resources qualified academically, culturally and professionally to carry out their tasks in different specialties of the college community service.
- (2) Development of scientific research, writing and translation in various specialties of the college.
- (3) Building a genuine partnership with the community.
- (4) Continuous improvement of the college academic and administrative organization.
- (5) Providing advancement to students' activities and training to acquire the necessary knowledge and skills.

**Values:**

- (1) Quality and Excellence.
- (2) Teamwork.
- (3) Development and Continuing Education.
- (4) Community Service.

## Academic Guidance

### Academic Guidance:

The academic guidance is a key activity within the university to discover students' inclinations and potentials. It also determines students' goals and helps them plan their future in accordance with their talents. Firstly, academic guidance aims to present the university's academic programs, rules and regulations inside the campus and the social and sportive atmosphere to the students. Secondly, it explores the academic aspirations of the students and their potentials and provides them with the opportunity to benefit from the experience of the faculty staff members. Thirdly, it helps the students solve problems in a methodical and logical manner. Lastly, it provides the students with the information and skills necessary to achieve their prospective career goals and helps to enhance the talents they possess.

The university encourages students to utilize their talents to grow academically, psychologically, socially and morally. It also aims at preparing the students in accordance with their academic aspirations, potentials and societal values. Accordingly, the students will grasp the skills necessary for their prospective future careers. There is no doubt; the philosophy of the academic guidance emerges from its objectives.

The academic guidance looks forward to positive changes in the student's attitude toward the cultural, social and vocational values of his society. It also helps the student to discover their needs and enable him to make their own decisions in relation to choosing the suitable field of study. Students will be capable of overcoming the difficulties facing them during their studies.

The institutions of higher education mostly rely on the experience of their staff members in guiding the students in academic issues such as: choosing the suitable field, providing the students with suggestions and advice that will improve their academic performance. The good relationship resulting from continuous interaction between the students and their academic guides helps them to adapt and benefit from the environment of the university in a methodical, social, vocational, sportive and ethical manner. This relationship increases the loyalty of the students to their awareness institutions.

In addition, the institutions of higher education helps the students in choosing the suitable courses, informing students about the changes in the requirements and the academic regulations as well as assisting the students in solving their academic and administrative problems. Finally, they explore the students' potentials and skills to enhance individual creativity.

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**Plan characteristics: Plan of the Academic Guidance in Semester:****Firstly: The Nature of the Plan**

It is a range of activities and events taken by the Academic Counsellor in the first semester in the college building. The activities include initiating the students to their study and scio-cultural programmes in the college, identifying different types of problem cases and carrying out follow-ups at suitable intervals till the end of the semester. The role of an Academic Counsellor is to activate these activities in coordination with the Academic Guidance Unit and all the concerned parties in order to integrate the students in their academic environment.

**Secondly: The Objectives Of the plan**

The objectives of the plan are based on the following:

- (1) Disseminate and promote the culture of the Academic Guidance of the students and provide the service to those who are in need but not asked for.
- (2) Discover and support the unsurpassed students.
- (3) Help students to find direct solutions concerning the academic problems that they face.
- (4) Provide an opportunity for students to take direct and indirect advantages from the experiences of the faculty staff outside the classrooms.
- (5) Planning therapeutic activities to meet the poor compatibility and achievement of some students.
- (6) Provide necessary counseling and guidance to modify the undisciplined behavior of the students.
- (7) Help students to integrate into and adapt to the academic and educational environment of the college.
- (8) Motivate outstanding students academically and practically.
- (9) Take advantage of the talents of students that have been discovered and help them to do their best through the guidance to the activities of the Student Affairs.

**Thirdly: Awareness of the Plan**

The Office of Guidance and Counselling in the College takes a series of actions to inform the plan as the following:

- (1) Prepare the directory of the Academic Guidance and Counselling and distribute it to the fresh students at the beginning of the academic semester.
- (2) Display the plan on College Notice Boards for comments, certification and approval of it.
- (3) Distribute the fresh students to the faculty staff and keep the Alumni with their own counsellors at the beginning of the academic semester.

(4) Post the plan on the College Web Site for wider circulation and availability.

### **Fourthly: Functions of the Academic Counsellor for the Purposes of Applying the Plan**

**1- Prepare the student's file** - the Academic Counsellor prepares a special file for each student of the students who have been assigned to him. The file contains the following:

- The Student Information Form.
- List of the academic specialty courses that lead to the student's graduation.
- The Registration Form if possible.
- Latest position of the student's academic status.
- Other administrative documents ... etc.

### **2- General Guidance for the Student**

Guide the student to the one who can respond to his inquiries.

**Timetable:** The Counsellor makes sure that students know the time and place of lectures, notices and suggests of discrepancy **if any**.

**The absence of the student:** Monitoring the students' absence is one of the tasks of the course professor, and the Academic Counsellor has to follow-up the cases referred to him by the Office of Guidance and Counselling according to the plan.

### **3- Performance Evaluation**

The Academic Counselor has to monitor the students' quarterly and Cumulative Grade Point Average (GPA), so that whose Cumulative Grade Point Average (CGPA) is under the Academic Warning can be guided to raise his Cumulative Graduate Point Average (CGPA) to come out from that Warning status. The Academic Counsellor has to explain to the student that the Academic Warning is not a kind of punishment or disciplinary action, but it enables the student to continue with reduced burden of study to help him improve his performance. These students have to finish the specialty within an acceptable and reasonable level which is more important than the rapid completion of the program with low performance, and which may expose them to be dismissed if they fail to do so.

### **4- Discover and support the unsurpassed students**

The Counselor reviews the quarterly results of the tests and the end of the semester to identify the failure students (who have obtained less than 60%).

Do personal interview with all these students to get acquainted with their problems, from their point of view, and write a report about that. In case of identifying the reason of their incapability, the issue is submitted to the Office of Guidance and Counselling for support and follow-up to resolve the problem until the student's achievement performance improve can raise their scores.

The Counselor writes, in a file, the names of these students, the nature of the problem and the extent of the student's achievement.

The Office of Guidance and Counselor works on following-up the unsuccessful students according to the relevant department.

#### **5- Take care of the outstanding students**

The Academic Counselor, in cooperation with the Office of the Counselling Guidance and the Management of the College, works on designation and implementation of a program to take care of the outstanding students which aim to:

- Upgrade the capacity of the students, culturally and intellectually and thereby help them develop their talents.
- Create a spirit of fair competition among the students.

#### **Fifthly: Activities and Events in the Plan**

It is expected that the plan covers the following activities and events:

- Arrange periodic meetings with the students to communicate with them on a personal level to discuss the problems and issues they face.
- Establish Electronic communication with students whenever possible to discuss all the difficulties they face in their studies.
- Involve students in seminars and workshops organized by the College "or other Colleges whenever possible" to facilitate the personal and social interaction and thus help them integrate in the academic environment of the College life.
- Involve students in various activities in the College.

#### **Sixthly: The Implementation Timetable for the Plan**

It is suggested that the execution of the plan is done by the Office of Academic Guidance and Counseling in the College according to the following form:



week	Tasks,Activites
(1)	Preparation of the plan and prepare the students
(2)	Arrange meeting with students to welcome them, introducing one student to another and clarify the special tasks of the Academic Counsellor
(3)	-Arrange meeting with the faculty staff to coordinate with them in the performance of tasks. -Receive a list of the students of each academic counsellor as it exists on the portal and their Academic situations. -Drawing up a list of the students and their cases, however, be as they are, weak of outstanding and inform the faculty staff
(4)	-Inventory of creative activities for students and their orientation to start joining the various activities in the college. -Get a list of the students who did not attend 75% of lectures from the faculty staff, contact them or their families to inform them about their embarrassing situation, and determine the reasons to provide assistance if possible.
(8)	-Psychological preparation and solving the problems related to the first quarterly test. -Get a list of the students who did not attend 50% of lectures from the faculty staff, contact them or their families to inform them about their embarrassing situation, and determine the reasons to provide assistance if possible.
(10)	Meeting with all faculty staff to determine the conditions of the failure students and what was ignored and the effect to the following program with them to improve their results (after the first quarterly test), as will as the outstanding student s and what was done for them of motivate more to the light of the results of the first test of certain cases that need a special care.
(12)	Get a list of the students who did not attend 25% of lectures from the faculty staff, contact them or their families to inform them about their embarrassing situation, and determine the reasons to provide assistance if possible.
(13)	Identify the students that suffer from problems related to the tests and suggest the ways to overcome them.
(14)	-Get a report from the student counsellors about the development in the cases of the unsuccessful students after the second quarterly test or the evaluation from the faculty staff for those who have not had this test. -Prepare the program "Hour of guidance "where each Academic Counsellor hosts all the students of the Academic Guidance.

<b>(15)</b>	<p>-Follow-up the faculty staff in carrying out the program “Hour of guidance “and meet the students to prepare them for the semester final tests.</p> <p>-Given a lecture on “Test anxiety and How to Deal with it” as part of preparing the students for the tests to be administered at the end of the semester by a specialist psychological, if possible. The alternative in the head of the office of Guidance and Counselling in the college theater.</p> <p>-Organize the opinion poll of the students to get to know their impressions on the activities of the Academic Guidance in general.</p>
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**Seventhly: The Evaluation Method of the Plan**

The procedures of implementation and activation of the plan can be done in the following way:

- Distribute the evaluation form to students at the end of each semester to facilitate the adjustment process for any error and leave them free to express their views through closed and open questions without writing their names.
- Examine the files submitted to the Guidance Office at the end of each semester along with the reports of the meetings with the students to assess their commitment to the implementation of the plan.

## Admissions and Registration

### **Vision:**

Provide academic services to students and complete the admission and registration procedures based on modern techniques and usage of advanced electronic means.

### **Mission:**

Provide adequate academic information about the university & scientific faculties and specializations, and to provide academic services to students, completion of Admission & Registration using modern technology means, developing and improving the work performance mechanism, simplify the procedures, clarify the rules & regulations and increase awareness of its applications.

### **The Deanship seeks to achieve the following goals:**

- (1) Work on finding a seat in the university for each student who fulfills the admission requirements.
- (2) To attract the best high school graduate students to the university.
- (3) Exert the efforts to educate the student by study and exams rules & regulations through different means within and outside the university.
- (4) Documentation of students' academic records and work on constantly updating them electronically.
- (5) Work on developing and adapting the technology available in the Deanship so that students can pursue academic affairs from anywhere at any time.
- (6) Work on payment of students remunerations on due time and eliminating any obstacles in this regard.
- (7) Work on documentation and expedite finalizing the student graduation procedures within the period specified in the University Calendar.

### **Services provided by the Deanship of Admission:**

- The students are submitted electronically in accordance with the number of students admitted and the conditions are approved by the University Council.
- The Deanship distributes male and female students in various colleges on the basis of their academic aspirations and the number of admitted students in each college.
- It receives transfer applications outside of the university

- It processes certificate equalization and stores information.
- It participates in the examination process for admitting new students.
- It issues admission notifications and relevant letters.
- It receives visiting student delegations and provides them with information and newsletters.
- It visits schools and provides them with the necessary information about the admission and registration process.
- It stores and maintains students' grades and documents.
- It provides each department with scholarships for their students at the end of each semester.
- It restores the files of the students who suspend their study.
- It receives the applications of visiting students from outside the university.
- It receives the applications of withdrawal and executes them.
- It participates in the study plan.
- It follows up student progress in the study plan and documents his graduation.
- It submits students' problems and suggestions to the Permanent Committee of Student Problems
- It executes the decisions of the university council, college's councils, the permanent committee of student problems and the disciplinary board.
- It makes modifications concerning the student's name and identification card based on the university's policies and procedures.
- It issues the academic reference forms to be used outside the kingdom of Saudi Arabia.
- It coordinates the process of students' transfer from one college to another with a follow up of course equalization.
- It issues the grade reports and processes data entry
- It issues academic records and documents them.
- It issues student certificates and documents.
- It issues a graduate guide.
- It makes automatic registration.

- It issues student schedules.
- It issues student schedules and attendance sheets and sends them to the respective colleges.
- It receives and replies to inquiries from various colleges concerning registration.
- It issues result forms at the end of each semester.
- It processes the lists of graduates and those who have registration problems.
- It issues student identification cards.
- It deposits student allowances in their accounts at the end of each month and distributes the ATM cards through the respective colleges.
- It provides the Deanship responsible for the graduation ceremony with the necessary information they need.

### **Admission of prospective Students:**

The University Council determines the number of students to be admitted for the upcoming academic year on the basis of the recommendations presented by the College Councils and the respective departments at the college.

### **Admission Conditions:**

The Deanship of Admissions and Registration Affairs receives the applications for admission in accordance with the following conditions:

- 1) The applicant should have his/her high school certificate or an equivalent certificate from inside or outside Saudi Arabia and the university council determines qualifying certificates for admission at any of its departments
- 2) The applicant should have obtained the secondary school certificate, or its equivalent, in a period of less than five years prior to his/her application. However the University rector may waive this condition if the applicant has a persuasive explanation.
- 3) The applicant should have a certificate of good conduct.
- 4) The applicant should successfully pass any examinations or interviews deemed necessary by the University Council.
- 5) The applicant must be medically fit.
- 6) The applicant must obtain the approval of his/her employer, if he/she is an employee in any government or private institution.
- 7) The applicant must satisfy any other requirements specified by the University Council at the time of application.

- 8) BA holders may not be admitted to the university to obtain another BA degree and the university rector may waive this condition.
- 9) Applicants who are currently enrolled at another institution or the university itself may not be accepted.

### **Procedures for E-Admission:**

- 1) The students must undergo the necessary tests held by the National Center for Measurement and Assessment.
- 2) The student must read the admission conditions through the university electronic gate or the deanship of admission and registration website <http://w1.ksm-admit.net/>
- 3) The students fill in the form with the necessary data and the desired courses of study through the e-admission website within the allotted period of time.
- 4) When the period of admissions is over, the students will be admitted on the basis of those who have met all the admission requisites and those who have not. Admission depends on the equivalent average and the desired college.
- 5) Passing the personal interview is a must in some colleges.
- 6) After the respective evaluation, admitted students are informed through e-mail and mobile messages (SMS). The students receive information about the colleges and fields of study where they were selected. Admitted students must visit their accounts through the university electronic gate to print the form of nomination and the application form.

### **Registration:**

The students can automatically register the desired courses during every academic semester. The students may enter the academic system gate by using a user name and password to cancel courses, add courses, modify the schedule, confirm registration and print the schedule. The student must confirm his registration within the first week of the semester. The minimum load is (12) units and the maximum is (20) units.

The student who is not willing to study in the first semester or in any semester must apply for withdrawal, otherwise he will fail in the courses of that semester. If the student encounters any problems concerning his registration, he must go to his academic guide or to the Student Affairs office in the college.

## Deanship of Library Affairs

### Vision:

Upgrading the university libraries to become a minaret for knowledge and science and a center for providing all kinds of information and its services, therefore, it'd be a source for learning, searching and innovation among an encouraging and motivating atmosphere.

### Mission:

Supporting learning and searching needs for the university society through providing information storages, academic curriculum sources and offering a wide variety of services, Also, it seeks providing the suitable atmosphere for reading and utilizing these services, creating programs, different culture activities, spreading of reading culture and enhancing our attitude towards the book.

### Objectives:

- Providing information sources in all its different kinds required by libraries and units of the university.
- Technical treatment and organization of information sources within libraries affiliated to the university through using the best vocational methods which would contribute to make **this source accessible and easier** for beneficiaries.
- Continuous planning and offering information services in all libraries of the affiliated libraries in a way which would be suitable for the beneficiary requirements and the available facilities.
- Planning for investing the allocated budget for information sources and services and development of its resources.
- Establishing a digital library for the university and improving, optimizing its services on a continuous basis.
- Cooperation with other libraries and authorities of mutual concern in away achieve benefit to the university and its different units.
- Organization of fairs in the field of libraries and information and participation according to the pursued measures.
- Definition of the scientific production of the university members using proper means.

- Continuous planning and providing sufficient well qualified manpower in the field of libraries and information according to size and requirements of work and the offered services in the different libraries of university.
- Preparation of criteria, specifications and measures related to the university libraries and its services in away which ensures the high quality of its services offered through such libraries.

### **Central Library:**

The Library of the Community College, which Tast in 1425 as a library subset of the libraries of colleges of the University of King Saud, the nucleus of the Central Library of the University of collected after independence, as this library is the central library when she moved finally to the Deanship of Library Affairs at the University collected in the month of Dhul in 1431, and provides library services to all employees of the university students, faculty and administrators as well as researchers and scholars from non-employees of the university, located in the Central Library building, the third round, the community college district in Khalidiya and an area of 400 square meters distributed over the library and the headquarters of the Deanship of Library Affairs

And includes the Central Library between its shores material equipment and software appropriate to serve the attendees the library, where there is the library furniture modern shelves of books and desks for reading and retreats Internet and retreats to read, and made available indexes through the Koha library management and provides gateways protection for books from unauthorized use.

- Sections of the Central Library
- Library Management
- Services beneficiaries
- The electronic catalog
- Hall of free viewing and reading
- Periodicals
- References and foreign books

### **Central Library Services**

#### **1. Access the internal service**



Data provided by the Central Library and branch libraries college access internal services by providing the right atmosphere to see, and also provide counseling and guidance service.

### **2. Service printing and imaging**

Data Service provides printing and imaging can be for students to print and imaging with regard to the educational process, according to the rules laid down by the Dean.

### **3. Service guidance**

Dean receives groups of students under the supervision of some faculty members to visit the library and give them information about how to use the library and the services provided by the Deanship of Library Affairs in the Dean's keenness on the definition of employees of the university its services

### **4. Reference service and respond to questions and inquiries**

Data provided many answers to questions and queries of the beneficiaries of the various employees of the university, relying on the reference sources such as dictionaries, encyclopedias, manuals and reports in both print and electronic

### **5. Foreign Loan service**

Data represented progress in the Central Library and branch libraries lending service employees of the university.

### **6. Service access to daily newspapers and magazines**

Dean provides a number of daily newspapers for consultation in the Library, and the newspapers, "Al-Riyadh" newspaper and the island"

### **7. Search service in the digital library Arabia**

Allow DDL from within the electronic services search service in the digital library Arabia Saudi Digital Library The Digital Library Arabia's largest gathering of e-books Academy in the Arab world, where currently has more than (114 000) e-book full-text in various scientific disciplines, and has more than 300 publishers worldwide such as Elsevier, Springer, Pearson, Wiley, Taylor & francis, Mcgrawhill and contain at books for publishers such as world-class academics: Yall University, Oxford University, Harvard University

### **Services:**

- Access to the full text of electronic books from anywhere and at any time.
- Availability of free search (keywords - Full text - Title - Author - Subject - date of publication).
- Giving a range of advanced interactive services.
- Providing electronic reference service.
- Provide awareness information service.
- Provide uniform access to the digital library. <http://dla.mu.edu.sa/node/25>

### 8. Search service in the electronic databases

Dean offers through its gateway to the Internet thirty-one (31) global electronic database covering all disciplines at the University of Objectivity, and can access these rules through the portal at the following link: <http://dla.mu.edu.sa/node/36>

### 9. Automated search service in the electronic catalog for the University Libraries

Central Library offers research services in the electronic catalog Consolidated University Libraries collected, and provide training and guidance on the use of the electronic catalog and take advantage of it, and a link to the index on the Internet is: <http://dla.mu.edu.sa/node/22>

### 10. Search service in the Internet

Central Library offers research services to the beneficiaries in the Internet is regulated, in order to obtain information and sources that may not exist within the sources of information the university libraries.

#### Library the College of Science:

#### Library Departments:

- Library Administration
- Beneficiary Services
- Electronic Index

#### Library's Possessions:



Library possess a range of various information sources estimated with a number of 280 titles and 845 copies and volumes in all physical sciences.

### **Library Systems:**

Management of the library and its indexes will be through its coding system which is considered to be among the modern systems used in the library management.

### **Library Services:**

- Internal reading service
- Automatic Search in the library indexes.
- Reference Services
- Photography
- Continuous Updating
- Internet Service

### **Contact Information:**

E-mail: [Dla@mu.edu.sa](mailto:Dla@mu.edu.sa)



## Student Affairs

### About the party:

The Deanship of Student Affairs is considered the first and most important service center for the university male & female students. The deanship is providing its services through the Student Activities, Student Fund and full supervision & follow-up of these services so that the students can live in campus environment that suits their aspirations helping them to progress and succeed in their university.

### Mission:

Provide unique services that become incentive for male & female students to develop their life skills and polish their practical experiences.

Clarify the role played by the Deanship to serve the university students, define the plans & programs designed to raise the level of those services in the method that suits the university level.

### Vision:

Graduate students who have life skills who contribute to serve themselves, their community and their homeland.

### Objectives:

- Qualify generations that serve his religion and his country.
- Develop male & female students' skills and polish these skills with useful knowledge.
- Care for male & female students in all life aspects.
- Provide male & female students with financial support and activities in general.
- Caring for students and promote their potentials to become active pillars for their community.

### Student Activities:

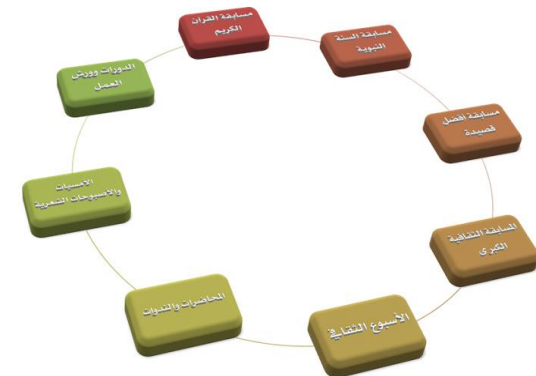
Student activities are considered the corner stone of Students' Affairs. The Deanship provides all the necessary the required for students through activities which contribute to fill his spare time as that will return at them with a great benefit. They help find a friendly atmosphere among students, and thus have a trusty and dependent generation through the skills and capabilities it gained. The goals of students' activities and their controls are:

### The objectives:

- The ability to think scientifically in an organized framework of the ethics of our religion.
- To enrich the cognitive aspects of the university students, motivate them to search and explore, and to strengthen the spirit of fair competition among them.
- To develop university student's Personality through diversification of sources of activity in light of the Islamic faith ( Akidah).
- Development of belief in shared common goals.
- To instill values in normal hearts of students such as cooperation, honesty, solidarity and perseverance on the hard work.
- Ability to take responsibility and leadership.
- To respect the work and general regulations.
- To develop a belief in the need for dialogue and taking the opinion of students in the activities programs and their events.
- Leisure time investment that will return with valuable benefits.
- To discover students' potentials and talents as well as to develop their skills and refined them.
- To establish normal social relationships providing happiness for the individual and society.
- Developing a sense of national belonging and sincerity.

### Controls:

- Diversity and inclusion.
- Impartiality and objectivity among students.
- Early pre-announcement about the activity.
- The student participating in the activity is merely required to be registered in the current semester of the activity.



- A student is demanded to meet the requirements for each activity.
- The composition of arbitral committees specialized in all competitive activity.
- Prizes are awarded for the first three runners in each activity.

### Student activities:

### Cultural Activities:

These activities develop the student culture and expand his mental perceptions in particular and his general knowledge broadly. These activities represent a wide range that that is demanded by the students such as:



### Social Activities:

These are programs that contribute in correlating students and planting friendly atmospheres among them through internal, external and international activities. Some of these programs and social activities are as follows:

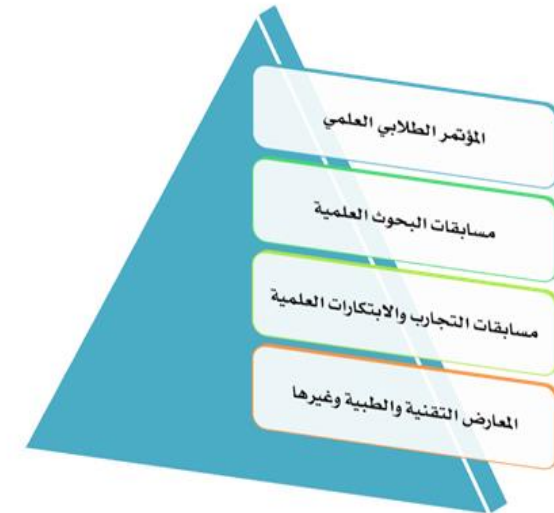
### Artistic Activities:

Are all art work produced by the student such as:



**Scientific Activities:** (Male & Female students)

Represent any student activity directly related to research or practical work in the humanitarian or scientific disciplines such as researches, innovations, exhibitions and others. Some of the programs provided by, supervised by or participated in by the Deanship are as follows:


**Sports Activities:** (Male Students)

They are all related sports activities within or outside the university corridors. Some of the deanship sports activities are:


**Scouts Activities:** (Male Students)

These are service activities that provide services to the community in terms of organization and follow-up. Scouts group is called (tribal scouts) in the universities.

Majmaah University seeks that its scouts group starts from where others have ended in all areas of student activities, especially the tribal scouts to join the development convoy of the Scout Movement in Saudi universities. The start would be in all stages either in leadership preparation and qualify them in a suitable way or through participations at all internal and external levels and Hajj public service camps. The university shall. The university will receive much attention from those officials responsible for development of scouts and provide all requirements to develop them till they become able to serve their religion and their homeland. The internal scout plan will be submitted in summer of each academic year and registration will take place with the beginning of each academic year. Qualification studies for scouts students will start during the academic year. The university is keen on foreign participation that add to the students more experience and training.

### **Theatrical Activities:** (Male Students)

These activities are associated directly to theater. All of these activities aim to produce an integrated theater staff to serve the university in its concerts and theatrical aims to polish students' talents in return for the desired benefit.





### Special needs center:

It is a service center that cares for the affairs of the special needs people through the following services:



### Smoking prevention program:

It is an integrated program aimed at eradicating this deadly lesion and seeks to make Majmaah University, the University without smoking, then protect **the youths from falling** into the gliding of smoking and its various disadvantages. This program includes extensive awareness campaigns, codified rules and regulations. The Deanship of Student Affairs pays great importance to this program that the university is keen on producing such program in the proper way that suits the university and the event that this program has been prepared for. The following are some of the activities that the Deanship is intending to perform to eliminate this scourge:



### Students' Fund:

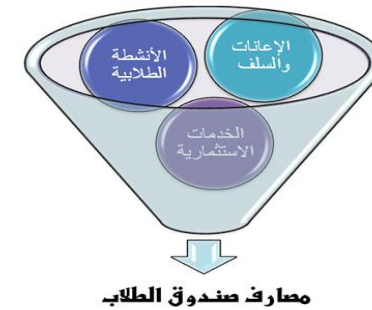
#### Objectives:

- Supporting student activities.
- Providing subsidies and grants (Chapter II).
- Providing excellent students' services like canteens and bookshops.
- Providing incentive awards to outstanding students.



### Students' Fund:

- Subsidies and grants.
- Students' Activities.
- Investment services.



### Subsidies:

a student is supported with a financial amount of five hundred riyals in the form of subsidy and once during the school year in accordance with the following rules:

1. The student is required to be enrolled in the current academic semester.
2. A student's cumulative GPA Should not be less than 3 out of 5.

3. Applicant must be of good behavior and conduct.

### Grants:

The student can submit a request for a grant not more than one thousand Saudi Riyals, and which will be reimbursed from the reward by 25% per month, according to the controls mentioned in item of subsidies.

### Peration of students:

It is a program offered by the Students' Fund for male and female university students and which aims to train the male/female student / at work skills and deal with others. It is also focused on training students on communication skills and communication in the field of students' activities, in the central library, or anywhere the college finds it appropriate, and this is done for a paid wage of SR 10 per hour, according to the following rules:

1. The student is required to be enrolled in the current academic semester.
2. A student's cumulative GPA Should not be less than 3 out of 5.
3. Working hours should not be less than 12 hours per week.

### The most important college facilities:

#### 1 - The college cafeteria



**2 - College restaurant**



**3- The college library and Internet services lounge in the college library**



**4 - Medical Clinic**



**5 - Bookshop**



## Quality and Accreditation

### Deanship of Quality Assurance and Accreditation in Brief:

Springing from the keenness of the Almajmaa University administration since its inception on 3rd of Ramadan 1430, the university dedicates its efforts to be among those distinguished worldwide; hence, it has been keen to adopt the application of quality in its comprehensive concept. Accordingly, the Deanship of quality and skills development was one of the first deanships established by Resolution No. (9) on 02/03/1431 H to take over the application of quality in all units of the University and satisfy the needs of real community. It aims to improve performance in all areas of the university; ensure the establishment of systems determining how to implement the work at the best efficiency and quality. In addition, it takes all the precautions to evaluate and measure performance according to specific criteria and enable the University of Competitiveness at local, regional and global levels. Respectively speaking, the Deanship is merely polarized to improve the level of internal and external communications, follow-up work in the Quality centers and units deployed in all sections of the university such as deanships, faculties and Female departments coordinate with third parties concerned and link between these departments and units to coordinate efforts.

### The Deanship of Quality and Skills Development Tasks:

1. Coordination with the National Assessment and Accreditation Commission, and act in accordance with its antipersonnel regulations and instructions.
2. Work to strengthen the awareness of staff of the University of the Importance of quality assurance processes and knowledge of the strategies needed to achieve them.
3. Develop specific mechanisms of what is required to be done at the university, which appoints the quality, and help achieve it via performance and output.
4. Provide assistance and support to academic departments and administrative units at the university in order to achieve quality improvement plans, and follow-up steps and updates.
5. Develop training plans appropriate for strategies of teaching, evaluation and review processes in coordination with the university colleges and units.
6. Help university units and colleges in the preparation of programs to improve the quality and output of the operations of the standardizing, and implementation.
7. Development of standard models used for the purpose of conducting the study and the preparation of reports on the quality indicators, special models characterization programs and disciplines, and other reports to help achieve quality in all fields.
8. Conducting periodic review process for graduates and other beneficiaries of the activities of the university and the pursuit of knowledge and the level of quality of education during, and after.

9. Continuous communication with those concerned and beneficiaries of the activities of the university, seeking to know and perceive their opinions and advice regarding skills development strategies.
10. Provision of the required referent materials, spreading all the data needed for quality and accrediting from its inner and outer sources.
11. Identify key performance indicators: for use in all faculties of the university and its deanship and departments, to enable each unit to determine which additional indicators related to its activities resume.
12. Preparing annual reports on the level of quality assurance, and submitting them to the university administration, pointing out the key performance indicators and proven (fixed) data, depending on the internal university units' reports, and the work of the Deanship.

### Objectives:

The Deanship, with its units and branches spread in the university's colleges and deanships aim to assess the university performance and development the educational, research, administrative and community service process. It also aims to attain the institutional accreditation for all its programs through the following sub-goals:

1. Establishing General development strategies for application of quality in the university.
2. Spread the culture of quality, academic accreditation and continuous improvement among the university affiliates.
3. Provide support and assistance to various university units in all quality and academic accreditation related matters.
4. Design and develop the tools necessary to evaluate the educational process by measuring the performance indicators of inputs and outputs of the educational process (teaching staff - workers - Students - Graduates ... etc.).
5. Identify strength and weakness points of the study programs offered by the university and submission of proposals and the appropriate means for continuous improvement.
6. Coordination with the National Commission for Academic Accreditation & Assessment, in the related subjects.
7. Continuous communication with the University activities related persons and beneficiaries and seeking their opinions and satisfaction for the various services offered to them.
8. Prepare, implement and follow-up the training programs that contribute to the development of skills of the university affiliates.



9. Exchange of experiences and ideas for the development of university education with the centers and similar units in Saudi universities and on global levels.
10. Preparation of annual reports on the status of the university quality.
11. Identify key performance indicators: for use in all faculties deanships, and departments, so that each unit can identify additional indicators related to self activities.
12. Preparation of annual reports on the level of quality assurance, and submission to the university administration, pointing out key performance indicators and static information, based on reports of internal university units, and the Deanship work.

### **The reasons behind increasing interest in the application of quality in higher education:**

1. Achieve a high level of performance in the educational process.
2. Increase the preparation of students enrolled in higher education.
3. Lifelong learning.
4. Revolution of information and communication technology, and its impact on the educational process.
5. To achieve adequate output of higher education institutions with the aspirations and requirements of the society.
6. Intense competition among educational institutions in the provision of higher education.
7. Rationalize spending and setting priorities to meet the needs of the community.

### **Introduction to the importance and content of academic quality:**

Quality is at the forefront of vital strategic interests that we face in our lives in general, and in the specific areas of specialties, in particular, due to the successive scientific and technical progress and increased competition between the service productive institutions. Furthermore, quality goes beyond its traditional concept of any product or service; it does extend to include the quality of institution or organization in order to improve and develop the operations and performance. In addition, it reduces costs, prizes time control, and achieves customer's wishes and requirements of the market. It also attains teamwork ship, and strengthens the sense of belonging, and all these can be summarized in two main points:

- a. Compliance with specifications
- b. Satisfying the requirements of the market or as contracted by the quality scientist Goran "harmonization for the use".

The recent developments in science and academic fields have led to a sharp increase of attention to academic quality. The issue of quality and its assurance has become the emphasis and the focus of attention of the Ministry of Higher Education at all levels in order to push up graduates to reach the levels and standards internationally recognized so that they are able to compete locally, regionally and globally. Therefore, quality assurance and accreditation have become one of the most important topics tackled by the Ministry of Higher Education. It gives them a heavy weight of attention through the establishment of an independent body (commission) whose main functions are following-up quality issues and indigenizing them at Saudi universities; this body is the National Commission for Assessment and Accreditation (NCAAA).

### **The National Commission for Academic Accreditation & Assessment**

The National Commission for Academic Accreditation and Assessment was established with accordance to the High Majestic approval No. 7 / b / 6024 dated on 02/09/1424 AH, and the decision of the Council of Higher Education No. 28/03/1424 AH at its twenty-eighth session held on 15/01/1424 AH. This body enjoys a moral personality and administrative and financial independency under the supervision of the Higher Education Council that is the authority responsible for the affairs of academic accreditation in higher education institutions over the secondary school level except for military education. This is all to improve the quality of higher public and private education, to ensure clarity and transparency and to provide standards rating the academic performance. Accordingly, some of Commission's main functions are setting rules, standards and conditions of evaluation and academic accreditation, and the drafting of regulations to ensure its application in higher education institutions.

### **The role of student in quality**

#### **First, quality activities:**

1. Dealing with transparency and seriousness with questionnaires distributed by the university, college or department.
2. Paying attention to participate in the activities of quality at the university or college level and seek to get exposed at their culture.
3. To maintain the gains and Student's rights, whether academic or extra-curricular through participating in the assessment of these services, improving them and proposing some solutions to help promote them.
4. To ensure the transparency and objectivity when participating in focus groups to discuss topics serving quality issues, whether at the university or college level.
5. To keep in touch with the university graduate unit after graduation to follow the activities serving the university graduates and contribute to their development.

6. To respond effectively to the university, college or department invitation to participate in the work of the committees dealing with graduate auditors.

### **Second, the developmental activities:**

1. To actively participate in the university external and internal activities contributing to raise the university rank with regard to the students' activities.
2. To actively participate in the departments scientific and extra-curricular activities for accreditation purposes.
3. To stick to the values reported in the context of the strategic plan of the University.
4. The initiative in making proposals for developmental proposals for the college or department to improve the educational process.
5. Participating in the membership of colleges' and departments' boards and committees related to the activities of the students to build up the principle of active participation in decision-making.
6. To ensure the registration and updating of one's personal data in the unit of Student Affairs during the study and after graduation.

### **Third, educational activities:**

1. Making use of assistance offered by the scientific faculty members and a private office hours as well as careful evaluation of its effectiveness in helping students.
2. Interaction with and participation in events offered in the classroom and serving the quality of the educational process.

### **What is the importance of accreditation?**

#### **For students:**

- Helps students in the process of selecting the university and finding out its reputation.
- Accreditation strengthens the university's reputation and popularity as an attracting destination for students and facilitates the process of attracting outstanding students.

#### **For educational institutions:**

- Direct feature of accreditation for the University is to help build a goodwill and a brand so that its members are proud of their sense of belonging to it.

#### **For discipline:**

- Accreditation helps to promote discipline among new and existing students.
- Accreditation is particularly useful for new and future disciplines and is useful for industries facing a shortage of skilled labor.

### **For recruiters:**

- Universities and specialties accredited give employers, locally and internationally, a good idea about the level of skills and behaviors of graduates (prospective employees) before they can be assigned to any actual workplace.
- Accreditation provides assurances to employers that the graduates of the program are theoretically and practically proficient in their fields and ready to enter the labor market

### **For Businessmen:**

- Arecognition by international accreditation bodies open borders and facilitate the free movement of skilled and qualified people among the various countries.
- Academic Accreditation provides appropriate insurance for businessmen that university graduates have approved the minimum knowledge and skills necessary for the success of the work.

### **For the State:**

- Local and international academic Accreditation, based on the strict quality standards, helps to build a stereotypical image of the State as an attracting destination for students seeking higher education and promotes educational tourism.
- Accreditation helps to draw a realistic picture of the State as a source of high-level skills to work in the global markets.

### **Terms of quality:**

To help achieve a common understanding of the concepts and terminologies important used in the system of accreditation and quality assurance, we offer definitions of certain terms commonly used.

#### **1. Accreditation:**

Is the recognition granted by a responsible and recognized commission (the quality assurance and accreditation) for an organization if they can demonstrate that their programs are compatible with the standards declared and certified, and have systems in place to ensure the quality and continuous improvement of its academic activities, in accordance with the regulations stated by the Commission.

### **2. Academic Accreditation:**

Is the recognition that the programs of an educational institution have achieved or reached the minimum standards of efficiency and quality set in advance by the awarding body (commission) for certification.

### **3. Academic standards:**

Are specific criteria approved by the institution and derived from external references, national or global, and includes a minimum of skills and knowledge that are supposed to be acquired by the graduates of the program, and meet the stated mission of the institution.

### **4. Academic Reference Standards:**

Are the points of reference with which the standards and qualities of the program are compared , and thus represent general expectations about achievement levels and general qualities that must be met in a graduate of any program(major).

### **5. Action Plans:**

The range of activities developed and implemented in a clear chain to reach specific goals.

### **6. Annual Report:**

Self-assessment report which is prepared every year for the educational institution and based on the reports of its academic programs and various activities that achieve the organization's mission.

### **7. Calibration:**

Adjustment and emulation of hardware and measurement in order to ensure the unit of measurement in various sectors that are used.

### **8. Commitment:**

The individual's sense of duty and responsibility towards his work, which makes it proficient work and raises the level of work quality.

### **9. Customer requirements:**

The desire of the customer who buys a product or ask for a service in order to get it, and therefore it must be available; otherwise, it will lead to consumer dissatisfaction that affects the sales and reputation of the company.

### **10. Consumer Satisfaction:**

Consumer feeling of happiness and satisfaction with the service he received. This satisfaction is the primary goal of quality in all its principles. Consequently, an institution is not considered reputable unless it receives the consent of the beneficiaries about its products and services.

### **11. Documentation:**

The process of writing and recording of all business data in an organization so that the institution has a history and reference points or mechanisms through which the data recorded can be analyzed with the aim of development and improvement.

### **12. Efficiency:**

Is the ratio of the output quality performance of a process in comparison with the quality of the input.

### **13. Evaluation:**

The process of measuring the quality of performance in all activities with the aim of continuous improvement of future performance.

### **14. General and Transferable Skills:**

Skills gained from the study method and has no relationship to specialized course material, but it is rather generally such as the ability to work in a team effectively.

### **15. Higher Education Enhancement Projects:**

Projects proposed and approved by the Ministry of Higher Education including the adoption of the necessary funding, which would enhance the quality of education in educational institutions, and increase the confidence of the beneficiaries in the outputs of institutions.

### **16. Human Resources:**

Manpower who are working within an organization and use of raw materials for an organization in order to complete the work of the institution and they are paid salary due this work.

### **17. Infrastructure:**

Infrastructure that serves the workers within an organization, such as buildings, laboratories, connections, telephones, and computers ... etc.

### **18. Educational institution:**

College or university or a higher institute which offers programs of higher education leading to a university qualification (BA) or higher degree (Diploma - Master - PhD).

### **19. Institutional accreditation:**

Is the process of evaluating the quality of the educational level of the institution on the ground that the institution conducts an investigation of the largest amount of goals, and has the resources to enable them to continue in the future.

### **20. Learning resources:**

Educational facilities of the institution that provide easiness and flexibility for students to learn and get the targeted skills.

### **21. The Mission:**

It is a declared constitution of an institution demonstrating the institution's mission and outputs targeted.

### **22. The Vision:**

It is an image of the institution and its long-term ambitions and objectives.

### **23. The organizational structure of the institution:**

The chart that shows the division of work within the organization, the name of positions available within the organization, and administrations hierarchical structures.

### **24. Curriculum:**

Is a set of mechanisms to achieve a set of knowledge and skills offered by the university on and off campus to achieve the desired learning outcomes of the educational program in specified period of time.

### **25. Program Assessment:**

The methods used for obtaining the views of the beneficiaries of the program, and include students, faculty members, alumni, and the labor market. All this is intended to improve and develop the educational program to respond to the progress that occurs on the content of the article and the needs of society and the environment.

### **26. TQM: Total Quality Management,**

It is a philosophical ideology aims to develop enterprise activity using analytical methods and sophisticated and varied statistics to obtain the best results. It involves all elements of the system and management in order to achieve the required quality in institutional work and satisfaction of the beneficiary.

### **27. Quality:**

A product that achieves and even exceeds the expectations of the consumer.

The ability of the product to meet the requirements of a job.

Matching the product to the specifications developed during design.

Meeting requirements expected by the service user or beneficiary.

### **28. Quality Assurance:**

It is an activity and a mean to ensure requirements and the standards required for the institution to accomplish the goal of the organization to reach the outputs satisfying the labor market.

### **29. Quality Committees:**

A group of people from both inside and outside the institution, who are responsible for following up the smooth running of the system of quality within the organization.

### **30. QC: Quality Control,**

Are the techniques and practical activities used for conducting a Permanent examination for activity output.

### **31. QCs: Quality Circles:**

A small group of workers involved in the process of ongoing cooperative study aimed at detecting problems that obstruct the running of work and provide appropriate solutions.



### **32. Quality Improvement:**

The executive procedures and regulations taken by the organization to increase the effectiveness of the activities and operations within the organization per semester. This is done so to turn with a valuable benefit at both the institution and the consumer.

### **33. Quality Indicators:**

Set of standards that describe the quality of the work and upon which the assessment is based.

### **34. Quality Objectives:**

Set of ambitions for which the organization draw a plan to reach; this pattern is to increase the confidence of the customers and its success as a result.

### **35. Quality Policy:**

A method of the institution allowing it to have an access to a high-quality level; and this would lead to a greater chance to gain customer satisfaction.

### **36. Quality Standards:**

Systems and limits to organize the work within an institution so that all outputs become of a high degree of quality and this is in accordance with the recognized standard issued by a local or an international organization.

### **37. Quality Strategy:**

Short-term plans that will fulfill the quality to upgrade the standard of quality.

### **38. Quality tools:**

Methods, techniques and schemes that are used to solve the problems of quality, assess the level of performance within the organization and help the development of the institution.

### **39. TQM: Total Quality Management,**

It is a philosophical ideology aims to develop enterprise activity using analytical methods and sophisticated and varied statistics to obtain the best results. It involves all elements of the system and administrations in order to achieve the required quality in an institutional work and satisfaction of the beneficiary.

### **40. Self-Assessment:**

A personal measure for the progress made in the individual work by thinking about what one learned and the one's personal benefit from that work and the result of it.

**41. Product:**

It is an output of any process, whether material or moral.

**42. Service:**

It is a work performed by circulation of papers and documents among persons or by giving verbal orders so that the consumer gets his/her request.

**43. Site Visit:**

It is a visit by the external auditors to verify the self-study provided by the institution requesting accreditation.

**44. Students' achievement:**

It is the students' performance level within an institution, and what they achieve of superiority, knowledge and skill acquisition.

**45. Students' Support:**

It is a process of assisting and guiding students on how to get the most benefit out of the educational program of the institution.

**46. SWOT Analysis: Analysis of the Strengths, Weaknesses, Opportunities and Threats,**

It is a tool of analytical quality aiming to assess and study the current strategic situation for an organization; it helps identify strengths and weaknesses in the organization and find out its chances of development and the threats that affect it. Such a process helps design the developmental strategic plans for the organization.

**47. Teaching and Learning Methods:**

The methods used by teachers to help students achieve the targeted scientific results to the course.

**48. Work Environment:**

The place and the circumstances surrounding the jobs and staff within a single institution.

**49. Process Capability:**

A statistical measure of the extent of any process managed to meet the requirements according to the standards of its design.

### **50. Peer Reviewer:**

An individual, from outside the organization, in the same professional staff and specialization such as individuals who are delivering what the organizations offers. Still, this individual, with no conflict of interest, can contribute in reviewing the educational program for the purposes of accreditation or internal quality assurance.

### **51. Preventive Action:**

The action taken to prevent the occurrence of errors in the work, and thus protects the institution from the consequences of its occurrence.

### **52. Teamwork:**

A group of people with several different skills working with each other to reach the unified goal within a certain period of time in which they share their different skills.

### **53. Team Leader:**

Team Leader should be a person with a leading figure and self-confidence, who gives his team a sense of power and can lead the team without any problem. He/she is responsible for managing the work and the involvement of everyone in the work and meetings; he impartially manages the talk without bias for a particular side. Above all, he is responsible for the development of operational steps for action.

### **54. Team Recorder:**

Someone with the skill of listening, a high concentration and a very fast organized writing; he is responsible for writing and documenting precisely what was going on in the team meetings.

### **55. Team Sponsor:**

He is a tactful person and eloquent speaker with a clear utterance and polite way of talking, who can deliver what he wants to others in an easy and simple way. He is responsible for conducting the problems faced by the team to the management, discussing them in an objective manner and resolving them.

## Undergraduate Study and Examinations

### Definitions:

#### Academic Year:

Two regular semesters and a summer session, if any

#### Academic Semester:

A period of no less than fifteen (15) weeks of instruction, not including the registration and final examination periods

#### Summer Session:

A period not exceeding eight (8) weeks of instruction, not including the registration and final examination periods. The weekly duration of each course in a summer session is twice its duration during the regular academic semester.

#### Academic Level:

It indicates the level of study. The levels required for graduation are eight (8) or more, in accordance with the specifications of each approved degree program.

#### Course:

A subject to study within a certain academic set of the approved degree plan in each major. Each course has a number, code, title, and detailed description of its contents to distinguish it from other courses. A portfolio on each course is kept in its corresponding department for follow-up, evaluation, and updates. Some courses may have prerequisite or co-requisite requirement(s).

#### Credit Hour:

Each of the weekly lectures, with a duration not less than fifty (50) minutes or a laboratory session or field study of not less than 100 minutes' duration.

#### Academic Probation:

A notification given to a student with a cumulative GPA below the minimum acceptable limit as explained in these regulations.

#### Class Work Score:

The score which reflects the student's standing during a semester according to his/her performance in examinations, research, and other activities related to a particular course.

**Final Examination:**

An examination in course materials, given once at the end of every semester.

**Final Examination Score:**

The score attained by a student in the final examination for each course.

**Final Score:**

The total sum of the class work score plus the final examination score for each course out of a total grade of 100.

**Course Grade:**

A percentage, or alphabetical letter, assigned indicating the final grade received in a course.

**Incomplete Grade:**

A provisional grade assigned to each course in which a student fails to complete the requirements by the required date. This is indicated in the academic record by the letter grade (IC).

**In-Progress Grade:**

A provisional grade assigned to each course which requires more than one semester to complete. This is indicated in the academic record by the letter grade (IP).

**Semester GPA:**

The total quality points a student has earned, divided by the credit hours assigned for all courses taken in a given semester. Total quality points are calculated by multiplying the credit hours by the grade point in each course.

**Cumulative GPA:**

The total quality points a student has earned in all courses taken since enrolling at the University, divided by the total number of credit hours assigned for these courses (see Appendix B).

### **Graduation Ranking:**

The assessment of a student's scholastic achievement during his/her study at the University.

### **Minimum Course load:**

The minimum number of credit hours a student can register determined by his/her academic status, and in accordance with the University Council decisions.

### **Absences and Warnings:**

1. Absences are counted from the first day of the semester. The student must regularly attend all lectures and practical lessons. The student will not be allowed to continue the course or participate in the final examinations if his percentage of attendance is less than (75%) of the lectures and practical lessons allotted for the course. The student who is deprived of attending the final examination will fail that course.
2. College council must approve lists of deprived students
3. College which offers the course or its behalf may allow a deprived student to enter the final examination if they submit a valid excuse provided that the missed classes are not 50% or more of class time.
4. Lists of deprived students are to be announced before final examinations.
5. Students whose excuses are valid take the final examinations with their peer students. College council has the right to make exceptions to this.
6. The student will receive an academic warning if his accumulative average doesn't go beyond (2.00) and he will be expelled if he receives three consecutive warnings.
7. A student who is absent for a final examination, will be given a zero grade for that examination. His/Her grade in the course will be calculated on the basis of the class work score he/she obtained over the semester.

### **Leave of Absence:**

Students are allowed to be excused from the semester for a period not exceeding five weeks or eight weeks (for students in the academic year system) prior to the beginning of the final examination if he submits an excuse acceptable to the college council.

The student must complete all the appropriate procedures and submit the form to the Department of Documentation in the Deanship before the deadline.

The Deanship requires the consent of the female student's guardian when she applies to be excused. The duration of absence is counted within the duration required for fulfilling the requirements of graduation.

The student must obtain the approval of his employer if he works or has a scholarship when applying for a leave of absence. A visiting student will not be approved for leave of absence during the semester if he studies outside the university.

### **Study Postponement and Suspension:**

The student is allowed to apply for postponement before the end of the first week of the semester, if he presents an excuse acceptable by the dean, and the postponement duration must not exceed two consecutive semesters or a maximum of three in consecutive semesters.

The students applying for postponement during the academic year are not allowed to postpone two consecutive years or more than a maximum of two in consecutive years throughout the duration of study, otherwise, the student's file will be cancelled and he will be terminated from the University.

The postponement is not calculated within duration necessary for fulfilling the requirements of graduation.

### **Expulsion from University:**

The student shall be discharged from university in the following cases:

1. If the student receives a maximum of three academic warnings due to his low accumulative average (less than 2). The student may have a fourth chance to increase his accumulative average assuming that he will obtain 48 points by studying 12 units. This process is automatically calculated.
2. If the student does not finish the university requirements within a maximum of half the duration allotted for his graduation. In addition to the program duration, the college council may give the student an additional chance to finish the university requirements within a maximum of double the duration allotted for graduation, based upon specific conditions.

### **Visiting students:**

A "visiting student" is a student who studies courses at another university or in any branch of the University to which he/she belongs without transferring. These courses are considered equivalent to those offered at the University, according to the following rules:

1. The student must obtain the approval of his/her college before he/she begins his/her studies.
2. His/Her studies should be at a recognized college or university.

3. The course the student takes outside his/her college should be equivalent, in terms of content, to a course required for graduation.
4. If the visiting student is studying in one of the branches of the University to which he/she belongs, the rules under Article 47 apply.
5. The University Council determines the maximum credit hours to be allocated to a visiting student from outside the University.
6. The course grades credited to the visiting student will be recorded in his/her academic record, but not included in the calculation of his/her cumulative GPA.
7. Any other conditions required by the University Council should be satisfied.



### Transfer:

#### ❖ **Transfer from One University to Another:**

The transfer of a student from outside the university may be accepted under the following conditions:

1. Acceptance of both deans of the two designated colleges in both universities
2. The student should have studied at a recognized college or university for at least one semester.
3. The student must not have been dismissed from that university for disciplinary reasons.
4. The student must satisfy the transfer conditions, as determined by the receiving college council.
5. The course load to be taken at Majmaah University should not be less than 60% of the required course to earn a BA from Majmaah University.
6. Students may transfer from one university to another in Saudi Arabia for one time only.
7. The duration of stay at the first university and the remaining duration for graduation from Majmaah University should not exceed the average of the maximum and minimum limits for completing his/her degree program.
8. Transfer procedures must finish two weeks before the commencement of the semester or the academic year for colleges that follow the year system
9. For students who do not satisfy the above conditions, the university rector in extreme cases may make exceptions based on the recommendations of the Committee for student academic problems. Exceptions may not contradict what article 42 reads.

#### ❖ **Transfer from One College to Another within the University:**

1. A student may transfer from one college to another after obtaining a recommendation from the designated deans and the acceptance of the Committee for student academic problems. Transfer must be in accordance with any conditions set fourth by the college to which the student will transfer.
2. The student remaining duration for graduation is enough to finish all graduation requirements of the new degree
3. All transfer procedures must be finished within the first week of the semester or the year for the colleges that follow the year system
4. A student may not be allowed to transfer except after studying for one semester
5. A student may transfer for one time only during his study at the university

6. For students who do not satisfy the above conditions, the university rector in extreme cases may make exceptions based on the recommendations of the Committee for student academic problems. Exceptions may not contradict what article 46 reads.

❖ **Transfer from one course of study to another within the College:**

Upon the approval of the dean of the college, the student is allowed to transfer from one course of study to another in accordance with the conditions set by the college council.

All courses previously taken by the student, along with the scores, accumulative and semester averages are all fixed in the academic record of the student during his university study.

**Withdrawal from University:**

The student can completely withdraw from the university if he finishes the clearance procedures, returns the student I.D. card and brings his identity documents to restore his file.

If the student is willing to re-register in the university after withdrawal, he will undergo the regulations of suspension.

When a student withdraws from the university, he must take the following points into consideration.

1. The period of his withdrawal from university is counted as if he was suspended from study.
2. The student who withdraws from university will not be granted a stipend until he registers in a new semester.
3. Monthly stipends are not granted during the summer semester unless the student registers in the summer semester.
4. The student must submit a letter of clearance concerning housing, library and other university facilities.

**Semester Average and Accumulative Average**

**Semester Average:**

The result of dividing the sum of points obtained by the student by the number of units representing the courses the student has studied in any semester. The points are calculated by multiplying the academic unit with the equivalent grade the student gets in each course.

**Accumulative Average:**

The result of dividing the sum of points obtained by the student in all the courses that he has studied by the number of units representing these courses.

### Examinations and Grading:

The council of the college that teaches the course may allow the student to study the requirements of any course in the following semester on the basis of a recommendation by the instructor of the course.

The student then receives (IC) grade in his academic record and it is not calculated in his semester average nor in his accumulative average unless he fulfill the requirements of that course. If one academic semester passes without changing the (IC) grade in the student's record due to not fulfilling the course, the (IC) grade is replaced by (F) which is calculated in his semester average and in his accumulative average.

The mark of class work is calculated in these two ways:

- Oral exams, practical exams, researches, class activities or all of these choices or some of these choices in addition to at least one written exam.
- At least two written exams.

If research courses entail more than one semester, the student receives (IP) in his record.

By fulfilling the requirements of the course, the student will obtain the grade of that course. However, if the student cannot fulfill the course within the allotted time, the council of the college may approve an (IC) grade in his record.

### The grades are calculated as follows:

Percentage	Grade Significance	Grade code	GPA (out of 5.0)
95 – 100	Excellent Plus	A+	5.00
90 – 94	Excellent	A	4.75
85 – 89	Very Good Plus	B+	4.50
80 – 84	Very Good	B	4.00
75 – 79	Good Plus	C+	3.50
70 – 74	Good	C	3.00

65 – 69	Pass Plus	D+	2.50
60 – 64	Pass	D	2.00
Less than 60	Fail	F	1.00

The general grade of the student when he graduates (based on his accumulative average) shall be as follows:

- Excellent: if the student's accumulative average is not less than (4.50).
- Very Good: if the student's accumulative average ranges from (3.75) to less than (4.50).
- Good: if the student's accumulative average ranges from (2.75) to less than (3.75).
- Pass: if the student's accumulative average ranges from (2.00) to less than (2.75).

The first honor rank is granted to the student who scores an accumulative average ranging from (4.75) to (5.00) at the time of graduation. The second honor rank is granted to the student who scores an accumulative average ranging from (4.25) to less than (4.75) at the time of graduation.

#### A Sample of Calculating the Semester Average and the Accumulative Average for the First Semester

Course	Units	Mark	Grade	Course Grade	Quality Points
ISC 301	2	85	B+	4.50	9:00
CHEM 324	3	70	C	3.00	9:00
MATH 235	3	92	A	4.75	14.25
PHY 312	4	80	B	4.00	16:00
<b>TOTAL</b>	<b>12</b>				<b>48.25</b>

First Semester

$$\frac{\text{Total quality points (48.25)}}{\text{Total credits (12)}} = 4.02$$

### Second Semester

Course	Units	Mark	Grade	Course Grade	Quality Points
ISC 104	2	96	A+	5.00	10
CHEM 327	3	83	B	4.00	12
MATH 314	4	71	C	3.00	12
PHY 326	3	81	B	4.00	12
<b>TOTAL</b>	<b>12</b>				<b>46</b>

### Second Semester

$$\frac{\text{Total quality points (46)}}{\text{Total credits (12)}} = 3.83$$

### Cumulative

$$\frac{\text{Total quality points (48.25+46)}}{\text{Total credits (12+12)}} = 3.93$$

### Graduation:

The Deanship of Admissions and Registration Affairs prepares the graduation report (i.e. memorandum) at the end of each semester and delivers it to the university council to be approved.

Students will not graduate unless they obtain the approval of the university council.

The prospective graduates must go to the Deanship of Admissions and Registration Affairs to make sure that they have fulfilled the requirements of graduation and to fill in the form related to the graduation book within the first week of the semester in which graduation is expected.

They must submit the following:

1. One photo (4x6): (for male students only).
2. One copy of Passport (page one, for those who want to write their names in English).

3. Identification card (one copy for Saudi male students) or Family notebook for Saudi female students.

The university invites you to attend the graduation ceremony. The graduate student must go to the Deanship of Admission and Registration Affairs file section and obtain a clearance letter to be signed by the respective Departments.

## Department of Physics

### A brief on Department of physics:

Department of Physics was founded with the establishment of the College of Science in Zulfi in 1427 (2006) as one of the four departments of the College (mathematics, Physics, Medical laboratories, Computer). Department started its first year with eight students, and the number of students was growing gradually at a rate of 15 students each year until it reached 83 students in the academic year 1431-1432 AH. The Department of Physics teaches physics courses and gives its graduates Bachelor of Science degree in physics after the student passes the 136 study units successfully according to the new academic plan of the department that have been followed since the academic year 1429-1430 AH. In the future, the M.Sc. and the Ph.D. degrees will be establish, which would be awarded separately.

### Vision:

To deliver scientific education and research in Physics and enhance the Knowledge of Society.

### Mission:

“Program of physics is promoting an excellence in physics education through building knowledge, creating skills, conducting research and collaborating with society.”

### Objectives:

The Department of Physics aims in the context of the overall objectives of the Faculty of Science and objectives of the Department of Physics to the following:

#### **G1: Graduates should have the standing for further education, teaching, and research in physics.**

- **G1.1: Foundations and contemporary knowledge in Physics**
- **G1.2: Skills of handling problems on the basis of physics principles**

#### **G2: Skilled graduates that have the capability to conduct studies and research individually as well as in group for the solution of physics based problems.**

- **G2.1: Foundation for basic scientific research in Physics.**
- **G2.2 : Ability to cooperate as individuals or in groups with the society to solve Physics related problems.**

### Study approach in the department:

Student in the Faculty of Science spends four years spread over eight semesters. The study courses include the core courses (the requirements of the University - Faculty of requirements -the requirements of the department and specialization). The student must finish 137 units of study.

### Entry requirements for the department:

- General assimilation of the Department
- Cumulative average for the student
- The wishes of the student

### Serving the environment and Society:

- Teaching Physics and Statistics in the different colleges.
- Participating in research projects for the environment and society.
- Participating in various committees within and outside the college.
- Participating in cultural and scientific activities at the college and university.

### Career Opportunities for Graduates:

- Continue higher educations in physics and obtain their Ph.D.
- Work in research centers and universities.
  1. King Abdulaziz City for Science and Technology (<http://www.kacst.edu.sa>).
  2. King Abdullah City and Renewable Energy (<http://www.kacare.gov.sa>)
- Work in the public and private sectors of education.
- Work in the industry sector.

SABIC is the Saudi Basic Industries Corporation, one of the world's leading manufacturers of [chemicals](#), [fertilizers](#), [plastics](#) and [metals](#). (<http://www.sabic.com>)
- Work in power stations.
- Work at water stations, petrol ministry.
- Work in specialized research centres, quality control labs. and standards and measurements bureau.

### Educational methodology to get a Bachelor's degree

The students who study in the faculty of science spend four years spread over eight semesters which include basic courses (University requirements -Faculty requirements —the department and specialization requirements). The student must study 137 units.



**Study plan for the Bachelor's Degree in Physics:**

Program Study Plan					
1- Compulsory and Elective Requisites					
Requisite	Type of requisite	Total credit hours	Percentage of credit hours	Observations	
University	Compulsory	8	5.84%		
	Elective	4	2.92%		
College	Compulsory	29	21.17%		
	Elective	--	--		
Department	Compulsory	84	61.31%	12 hours from Mathematics from the Department	
	Elective	9	6.57%		
Free courses		3	2.19%		
Total hours and percentage		137	100%		
2- University Requisites					
Course Code	Course Number	Course	Credit Hours	Pre-requisite	Observations
ARAB	101	Linguistic skills	2(2+0+0)	--	Compulsory
SALM	101	Introduction to Islamic Culture	2(2+0+0)	--	Compulsory
SALM	102	Islam and building society	2(2+0+0)	--	Compulsory
SALM	103	Economical system in Islam	2(2+0+0)	--	Compulsory
--	--	University Elective	2(2+0+0)	--	Elective
--	--	University Elective	2(2+0+0)	--	Elective

### 3- Compulsory College Requisites

Course Code	Course Number	Course	Credit Hours	Pre-requisite	Observations
PCOM	113	Computer Skills	2(2+0+0)	--	
PMTH	112	Introduction to Mathematics 1	2(2+0+0)	--	
PENG	111	English Language 1	8(2+6+0)	--	
PSSC	114	Learning and Communication Skills	2(2+0+0)	--	
PMTH	127	Introduction to Mathematics 2	4(3+0+1)	--	
PENG	123	English for engineering and science	2(2+0+0)	--	
PPHS	128	Physics	3(2+2+0)	--	
PENG	112	English Language 2	6(2+4+0)	--	

### 4- Elective College Courses

Course Code	Course Number	Course	Credit Hours	Pre-requisite	Observations

### 5- Compulsory Department Requisites

Course Code	Course Number	Course	Credit Hours	Pre-requisite	Observations
MATH	201	Calculus I	3(3+0+0)	--	
PHYS	201	General Physics I	4(3+2+0)	--	

PHYS	202	General Physics II	4(3+2+0)	PHYS 201	
MATH	202	Calculus II	3(3+0+0)	MATH 201	
PHYS	211	Classical Mechanics	3(3+0+0)	PHYS 201 MATH 201	
PHYS	231	Waves and Vibrations	3(3+0+0)	PHYS 201 MATH 201	
PHYS	241	Thermodynamics	3(3+0+0)	PHYS 201	
PHYS	291	Thermal Physics Lab.	2(0+4+0)	PHYS 201	
PHYS	303	Mathematical Physics I	3(3+0+0)	MATH 202	
MATH	310	Differential Equations	3(3+0+0)	MATH 202	
PHYS	321	Electromagnetism I	3(3+0+0)	PHYS 202	
PHYS	332	Optics	3(3+0+0)	PHYS 231	
PHYS	351	Modern Physics	3(3+0+0)	PHYS 231	
MATH	324	Partial Differential Equations	3(3+0+0)	MATH 310	
PHYS	304	Mathematical Physics II	3(3+0+0)	PHYS 301	
PHYS	392	Optics Lab.	3(3+0+0)	PHYS 332	
PHYS	342	Statistical Physics	3(3+0+0)	PHYS 241	
PHYS	393	Electromagnetism Lab.	2(0+4+0)	PHYS 321	
PHYS	352	Quantum Mechanics I	3(3+0+0)	PHYS 351 PHYS 324	
PHYS	322	Electromagnetism II	3(3+0+0)	PHYS 321	
PHYS	423	Electronics	3(3+2+0)	PHYS 202	
PHYS	453	Quantum Mechanics II	3(3+0+0)	PHYS 352	
PHYS	494	Modern Physics Lab.	2(0+4+0)	PHYS 351	
PHYS	481	Nuclear Physics I	3(3+0+0)	PHYS 351	

PHYS	471	Solid state physics I	3(3+0+0)	PHYS 352	
PHYS	454	Atomic and molecular physics	3(3+0+0)	PHYS 352	
PHYS	495	Practical Training	1(0+2+0)	PHYS 392 PHYS 393	- Co-requisite
PHYS	496	Solid state physics lab.	2(0+4+0)	PHYS 471	
PHYS	497	Nuclear Physics lab.	2(0+4+0)	PHYS 481	
PHYS	499	Project	2(0+4+0)	PHYS 497 PHYS 498	

### 6- Elective Department Requisites

Course Code	Course Number	Course	Credit Hours	Pre-requisite	Observations
PHYS	205	Introduction to Astronomy	3(3+0+0)	--	
PHYS	361	Health Physics	3(3+0+0)	PHYS 202	
PHYS	355	Laser Physics	3(3+0+0)	PHYS 351	
PHYS	362	Biophysics	3(3+0+0)	PHYS 202	
PHYS	407	Computational Physics	3(3+0+0)	PHYS 302	
PHYS	456	Plasma Physics	3(3+0+0)	PHYS 322	
PHYS	472	Solid state physics II	3(3+0+0)	PHYS 471	
PHYS	406	Mathematical Physics III	3(3+0+0)	PHYS 304	
PHYS	473	Semiconductors	3(3+0+0)	PHYS 471	
PHYS	474	Materials Science	3(3+0+0)	PHYS 471	
PHYS	475	Renewable Energy	3(3+0+0)	PHYS 471	
PHYS	482	Nuclear physics II	3(3+0+0)	PHYS 481	
PHYS	484	Radiation Physics	3(3+0+0)	PHYS 481	
PHYS	485	Neutron Physics and Reactors	3(3+0+0)	PHYS 481	

PHYS	483	Elementary Particle Physics	3(3+0+0)	PHYS 481	
PHYS	476	Nanotechnology	3(3+0+0)	PHYS 471	

**7- Training Requisites**

Course Code	Course Number	Course	Credit Hours	Pre-requisite	Observations

**8- Suggested Distribution of Courses on Semesters**

Year	Course Code	Course Title	Required or Elective	Credit Hours	College or Department
<b>Prep Year</b>					
<b>1<sup>st</sup> semester</b>	PCOM113	Computer Skills	Required	2(2+0+0)	Computer Science
	PMTH112	Introduction to Mathematics 1		2(2+0+0)	Mathematics
	PENG111	English Language 1		8(2+6+0)	
	PSSC114	Learning and Communication Skills		2(2+0+0)	
<b>2<sup>nd</sup> semester</b>	PMTH127	Introduction to Mathematics 2	Required	3(3+0+0)	Mathematics
	PENG123	English for Engineering and Science		2(2+0+0)	
	PPHS128	Physics		3(2+2+0)	Physics
	PENG112	English Language 2		6(2+4+0)	

Year	Course Code	Course Title	Required or Elective	Credit Hours	College or Department
<b>Second Year</b>					
<b>1<sup>st</sup> Semester</b>	IC101	General Elective	Free	2(2+0+0)	
	MATH201	Calculus 1	Required	3(3+0+0)	Mathematics
	PHYS201	General Physics 1		4(3+2+0)	Physics
	ARAB101	Linguistic Skills		2(2+0+0)	
	ZPSY101	Thinking skills and learning methods.		2(2+0+0)	
	----	Free course	Free	3(3+0+0)	
	----	University elective course	elective	2(2+0+0)	
<b>2<sup>nd</sup> Semester</b>	PHYS202	General Physics II	Required	4(3+2+0)	Physics
	MATH202	Calculus II		3(3+0+0)	Mathematic
	PHYS211	Classical Mechanics		3(3+0+0)	Physics
	PHYS231	Waves and Vibrations		3(3+0+0)	
	PHYS241	Thermodynamics		3(3+0+0)	
	PHYS291	Thermal Physics Lab		2(0+4+0)	
<b>Year</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Required or Elective</b>	<b>Credit Hours</b>	<b>College or Department</b>
<b>Third Year</b>					
<b>1<sup>st</sup> Semester</b>	PHYS303	Mathematical Physics I	Required	3(3+0+0)	Physics
	MATH310	Differential Equations		3(3+0+0)	Mathematic

	PHYS321	Electromagnetism I		3(3+0+0)	Physics
	PHYS332	Optics		3(3+0+0)	
	MATH324	Partial Differential Equations		3(3+0+0)	Mathematic
	PHYS351	Modern Physics		3(3+0+0)	Physics
2 <sup>nd</sup> Semester	PHYS304	Mathematical Physics II	Required	3(3+0+0)	Physics
	IC102	Islam and building society		2(2+0+0)	
	PHYS393	Optics Lab.		2(0+4+0)	Physics
	PHYS342	Statistical Physics		3(3+0+0)	
	PHYS392	Electromagnetism Lab.		2(0+4+0)	
	PHYS352	Quantum Mechanics I		3(3+0+0)	
	PHYS322	Electromagnetism II		3(3+0+0)	
<b>Year</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Required or Elective</b>	<b>Credit Hours</b>	<b>College or Department</b>
<b>Fourth Year</b>					
1 <sup>st</sup> Semester	PHYS422	Electronics	Required	4(3+2+0)	Physics
	PHYS452	Quantum Mechanics II		3(3+0+0)	
	PHYS494	Modern Physics Lab.		2(0+4+0)	
	PHYS481	Nuclear Physics I		3(3+0+0)	
	PHYS471	Solid state physics I		3(3+0+0)	
	IC103	Economic system in Islam		2(3+0+0)	
	PHYS495	Practical Training		1(0+2+0)	
2 <sup>nd</sup> Semester	PHYS454	Atomic and molecular physics	Required	3(3+0+0)	Physics
	PHYS496	Solid state physics lab.		2(0+4+0)	
	PHYS497	Nuclear Physics lab		2(0+4+0)	
	PHYS499	Project		2(0+4+0)	
		Department elective	Elective	3(3+0+0)	

		Department elective		3(3+0+0)	
		Department elective		3(3+0+0)	

### Program Study Plan

#### 1- Compulsory and elective requisites

Requisite	Type of requisite	Total credit hours	Percentage of credit hours	Observations
University	Compulsory	--	--	
	Elective	12	8.76	
College	Compulsory	29	21.17	
	Elective	--	--	
Department	Compulsory	84	61.31	
	Elective	9	6.57	
Free courses		3	2.19	
Total hours and percentage		137	% 100	

#### 2- University Requisites

Course Code	Course Number	Course	Credit Hours	Pre-requisite	Observations
ARAB	101	Linguistic skills	(2+0+0) 2	--	Compulsory
SALM	101	Introduction to Islamic Culture	(2+0+0) 2	--	Compulsory
SALM	102	Islam and building society	(2+0+0) 2	--	Compulsory
SALM	103	Economical system in Islam	(2+0+0) 2	--	Compulsory



--	--	University Elective	(2+0+0) 2	--	Elective
--	--	University Elective	(2+0+0) 2	--	Elective

**3- Compulsory College Requisites**

Course Code	Course Number	Course	Credit Hours	Pre-requisite	Observations
PCOM	113	Computer Skills	(2+0+0) 2	--	
PMTH	112	Introduction to mathematics 1	(2+0+0) 2	--	
PENG	111	English 1 for prep. Year	(2+6+0) 8	--	
PSSC	114	Learning and communication skills	(2+0+0) 2	--	
PMTH	127	Introduction to mathematics 2	(3+0+1) 4	--	
PENG	123	English for engineering and science	(2+0+0) 2	--	
PPHS	128	Physics	(2+2+0) 3	--	
PENG	112	English 2 for prep. year	(2+4+0) 6	--	

**4- Elective College Courses**

Course Code	Course Number	Course	Credit Hours	Pre-requisite	Observations

**5- Compulsory Department Requisites**

Course Code	Course Number	Course	Credit Hours	Pre-requisite	Observations
MATH	201	Calculus 1	(3+0+0) 3	--	
PHYS	201	General Physics 1	(3+1+0) 4	--	
PHYS	202	General Physics 2	(3+1+0) 4	PHYS 201	
MATH	202	Calculus 2	(2+1+0) 3	MATH 201	

PHYS	211	Classical Mechanics	(3+0+0) 3	PHYS 201 MATH 201	
PHYS	231	Waves and Vibrations	(3+0+0) 3	PHYS 201 MATH 201	
PHYS	241	Thermodynamics	(3+0+0) 3	PHYS 201	
PHYS	291	Thermal Physics Lab.	(0+4+0) 2	PHYS 201	
PHYS	301	Mathematical Physics 1	(3+0+0) 3	MATH 202	
MATH	310	Differential Equations	(3+0+0) 3	MATH 202	
PHYS	321	Electromagnetism 1	(3+0+0) 3	PHYS 202	
PHYS	332	Optics	(3+0+0) 3	PHYS 231	
PHYS	351	Modern Physics	(3+0+0) 3	PHYS 231	
MATH	324	Partial Differential Equations	(3+0+0) 3	MATH 310	
PHYS	302	Mathematical Physics 2	(3+0+0) 3	PHYS 301	
PHYS	393	Optics Lab.	(3+0+0) 3	PHYS 332	
PHYS	342	Statistical Physics	(3+0+0) 3	PHYS 241	
PHYS	392	Electromagnetism Lab.	(0+4+0) 2	PHYS 321	
PHYS	352	Quantum Mechanics 1	(3+0+0) 3	PHYS 351 PHYS 324	
PHYS	322	Electromagnetism 2	(3+0+0) 3	PHYS 321	
PHYS	422	Electronics	(3+1+0) 4	PHYS 202	
PHYS	452	Quantum Mechanics 2	(3+0+0) 3	PHYS 352	
PHYS	494	Modern Physics Lab.	(0+4+0) 2	PHYS 351	
PHYS	481	Nuclear Physics 1	(3+0+0) 3	PHYS 351	
PHYS	471	Solid state physics 1	(3+0+0) 3	PHYS 352	
PHYS	454	Atomic and molecular physics	(3+0+0) 3	PHYS 352	
PHYS	496	Solid state physics lab.	(0+4+0) 2	PHYS 471	

PHYS	497	Nuclear Physics lab.	(0+4+0) 2	PHYS 481	
PHYS	499	Project	(0+4+0) 2	PHYS 497 PHYS 498	

**6- Elective Department Requisites**

Course Code	Course Number	Course	Credit Hours	Pre-requisite	Observations
PHYS	213	Introduction to astronomy	(3+0+0) 3	--	
PHYS	334	Health Physics	(3+0+0) 3	PHYS 202	
PHYS	333	Laser Physics	(3+0+0) 3	PHYS 351	
PHYS	361	Biophysics	(3+0+0) 3	PHYS 202	
PHYS	405	Computational physics	(3+0+0) 3	PHYS 302	
PHYS	435	Plasma Physics	(3+0+0) 3	PHYS 322	
PHYS	462	Medical Physics	(3+0+0) 3	PHYS 481	
PHYS	472	Solid state physics 2	(3+0+0) 3	PHYS 471	
PHYS	403	Mathematical physics 3	(3+0+0) 3	PHYS 302	
PHYS	473	Semiconductors	(3+0+0) 3	PHYS 471	
PHYS	474	Materials Science	(3+0+0) 3	PHYS 471	
PHYS	476	Renewable energy	(3+0+0) 3	PHYS 471	
PHYS	482	Nuclear physics 2	(3+0+0) 3	PHYS 481	
PHYS	485	Radiation Physics	(3+0+0) 3	PHYS 481	
PHYS	487	Neutron Physics and Reactors	(3+0+0) 3	PHYS 481	
PHYS	484	Elementary particle physics	(3+0+0) 3	PHYS 481	
PHYS	476	Nanotechnology	(3+0+0) 3	PHYS 471	

**7- Training requisites**

Course Code	Course Number	Course	Credit Hours	Pre-requisite	Observations
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PHYS	496	Practical training	1	PHYS 392	
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Year	Course Code	Course Title	Required or Elective	Credit Hours	College or Department
<b>Prep Year</b>					
<b>1<sup>st</sup> semester</b>	<b>PCOM 113</b>	Computer Skills	<b>Required</b>	(2+0+0) 2	Computer Science
	<b>PMTH 112</b>	Introduction to mathematics 1		(2+0+0) 2	Mathematic
	<b>PENG 111</b>	English 1 for prep. year		(2+6+0) 8	
	<b>PSSC 114</b>	Learning and communication skills		(2+0+0) 2	
<b>2<sup>nd</sup> semester</b>	<b>PMTH 127</b>	Introduction to mathematics 2	<b>Required</b>	(3+0+1) 4	Mathematic
	<b>PENG 123</b>	English for engineering and science		(2+0+0) 2	
	<b>PPHS 128</b>	Physics		(2+2+0) 3	Physics
	<b>PENG 112</b>	<b>English 2 for prep. year</b>		(2+4+0) 6	
<b>Year</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Required or Elective</b>	<b>Credit Hours</b>	<b>College or Department</b>
<b>Third Level</b>					
<b>1<sup>st</sup> semester</b>	<b>IC 101</b>	<b>Introduction to Islamic culture</b>	<b>Required</b>	(2+0+0) 2	
	<b>MATH 201</b>	<b>Calculus 1</b>		(3+0+0) 3	Mathematic
	<b>PHYS 201</b>	<b>General Physics 1</b>		(3+2+0) 4	Physics
	<b>ARAB 101</b>	<b>Linguistic Skills</b>		(2+0+0) 2	
	<b>ZPSY 101</b>	<b>Thinking skills and learning methods.</b>		(2+0+0) 2	

	----	<b>Free course</b>	<b>Free</b>	(3+0+0) 3	
	----	<b>University elective course</b>	<b>elective</b>	(2+0+0) 2	
<b>Fourth Level</b>					
<b>2<sup>nd</sup> semester</b>	PHYS 202	General Physics 2	<b>Required</b>	(3+2+0) 4	Physics
	MATH 202	Calculus 2		(3+0+0) 3	Mathematic
	PHYS 211	Classical Mechanics		(3+0+0) 3	
	PHYS 231	Waves and Vibrations		(3+0+0) 3	Physics
	PHYS 241	Thermodynamics		(3+0+0) 3	
	PHYS 291	Thermal Physics Lab		(0+4+0) 2	
<b>Year</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Required or Elective</b>	<b>Credit Hours</b>	<b>College or Department</b>
<b>Fifth Level</b>					
<b>1<sup>st</sup> semester</b>	PHYS 301	Mathematical Physics 1	<b>Required</b>	(3+0+0) 3	Physics
	MATH 310	Differential Equations		(3+0+0) 3	Mathematic
	PHYS 321	Electromagnetism 1		(3+0+0) 3	Physics
	PHYS 332	Optics		(3+0+0) 3	
	MATH324	Partial Differential Equations		(3+0+0) 3	Mathematic
	PHYS 351	Modern Physics		(3+0+0) 3	Physics
<b>Sixth Level</b>					
<b>2<sup>nd</sup> semester</b>	PHYS 302	Mathematical Physics 2	<b>Required</b>	(3+0+0) 3	Physics
	IC 102	Islam and building society		(2+0+0) 2	
	PHYS 393	Optics Lab.		(0+4+0) 2	Physics
	PHYS 342	Statistical Physics		(3+0+0) 3	
	PHYS 392	Electromagnetism Lab.		(0+4+0) 2	

	PHYS 352	Quantum Mechanics 1		(3+0+0) 3	
	PHYS 322	Electromagnetism 2		(3+0+0) 3	
Year	Course Code	Course Title	Required or Elective	Credit Hours	College or Department
<b>Seventh Level</b>					
<b>1<sup>st</sup> semester</b>	PHYS 422	Electronics	<b>Required</b>	(3+1+0) 4	Physics
	PHYS 452	Quantum Mechanics 2		(3+0+0) 3	
	PHYS 494	Modern Physics Lab.		(0+4+0) 2	
	PHYS 481	Nuclear Physics 1		(3+0+0) 3	
	PHYS 471	Solid state physics 1		(3+0+0) 3	
	IC 103	Economic system in Islam		(2+0+0) 2	
	PHYS 495	Practical Training		(0+2+0) 1	
<b>Eighth Level</b>					
<b>2<sup>nd</sup> semester</b>	PHYS 454	Atomic and molecular physics	<b>Required</b>	(3+0+0) 3	Physics
	PHYS 496	Solid state physics lab.		(0+4+0) 2	
	PHYS 497	Nuclear Physics lab		(0+4+0) 2	
	PHYS 499	Project		(0+4+0) 2	
		Department elective	<b>Elective</b>	(3+0+0) 3	
		Department elective		(3+0+0) 3	
		Department elective		(3+0+0) 3	

**Characterization courses:****PHYS 201: General Physics I**

Theoretical part: *Physics and measurements, Units and dimensions, Dynamics of particle in one dimension (displacement, average velocity, instantaneous velocity, acceleration, free fall), vector algebra and geometry, Motion in two dimensions, Projectile motion, Uniform circular motion, Tangential and radial accelerations, Newton's first law and inertial frames, Mass and weight, Newton's second law, Newton's third law, Friction, Work and energy, Vector scalar products, Work of variable forces, Kinetic energy and work-energy theorem, Conservative and non-conservative forces and potential energy, Power, Conservation of mechanical energy, The conservation law of linear momentum, Impulse, Collisions, Collision in one and two dimensions, Rotational motion with constant angular acceleration, Angular quantities, Moment of inertia, Torque and angular momentum, Work of rotational motion, Properties of matter: Elasticity, Stress, Strain, Modulus's, Strain energy, Fluid mechanics: Density and relative density, the concept of pressure, Pascal law, Archimedes principle, Fluid flow, Bernoulli's equation and its applications, Viscosity, Surface tension.*

Practical part: *Error and measurements, Force table, Hook's Law, Free fall, Projectile motion, Inclined planes, Verifying the equations of motion and collisions using air track, Young's Modulus.*

**PHYS 202: General Physics II**

Theoretical part: *Electric Charge, Insulators and conductors, Coulomb's law, Point charge, The electric field, Electric field of multiple point charges, The electric field of continuous charge distribution, examples of various shapes (disks, rings, spheres, planes), The parallel plate capacitor, Electric dipole, motion of point charge and electric dipole in electric field, Electric flux, Gauss's law, Applications of Gauss's law, Conductor in electrostatic equilibrium, The electric current, Batteries, current density, Conductivity and resistivity, Electric potential, The potential of point charges, The potential of dipole, The electric potential of many charges, Capacitance and capacitors, Energy stored in a capacitor, Fundamental circuits, Ohm's law, Series resistors, Parallel resistors, Kirchhoff's laws, RC circuits, Magnetism and magnetic force, source of magnetic fields, Magnetic field of a current, Magnetic dipoles, Ampere's law and solenoids, The magnetic force on a moving charge, The magnetic force on a current-carrying wire, Forces and torques on current loops, Induced current, Motional emf, Magnetic flux, Lenz's law, Faraday's law, Induced fields and EM waves, Inductors, LC circuits, LR circuits, AC circuits and phasor, Capacitors in AC circuits, RC filter circuits, Inductor circuits, The RLC circuits, Power in AC circuits, Wave phenomena, Longitudinal and transverse waves, Sound, The nature of light and the laws of geometric optics, Image formation, Interference of light waves, Diffraction patterns and polarization.*

*Practical part: Verification of Ohm's Law, Metric bridge, Charge and discharge of capacitors, Inductive Reactance, Capacitive Reactance, RCL circuits, Transformers, Speed of sound in air, Refractive Index of a Prism, Focal length of Lenses, Focal Length of Mirrors, Joules equivalence.*

### **PHYS 211: Classical Mechanics**

*Integration of Newton's equations of motion, motion under a constant force, motion under a force that is a function of time, velocity and position, time varying mass system. The Lagrangian Formulation of Mechanics, Generalized Coordinates and constraints, D'Alembert's Principles and Lagrange's Equations, Hamilton's Principle, Integrals of motion, Nonconservative systems, .....etc. Hamiltonian Dynamics, the Hamiltonian of a dynamical system, Hamilton's Canonical equation, integrals of Hamilton's, phase space and liouville's theorem, the passage from the Hamiltonian. General force motion, The two body problem, general properties of central force motion, effective potential and classification of orbits, general solutions of the problem of motion, Galilean references, Non Galilean references, inverse square law, kepler's law, application of general force, Newton's law of gravity, stability of circular orbits, the upsides and the advance of perihelion, hyperbolic orbits and Rutherford scattering. Collisions Between Particles, Direct impact of two particles, centre of mass coordinate system, scattering cross section in the L and C systems, Scattering by a central force field. Linear Oscillations, the simple harmonic oscillator, and harmonic oscillation in two and three dimensions, Damped Oscillations, relaxation time phenomena..... etc. Nonlinear Oscillation, Qualitative analysis - energy and phase diagrams, Elliptic integrals and Nonlinear oscillations, Fourier series, the method of perturbation, Ritz method, Methods of successive approximation, chaotic oscillations.*

### **PHYS 231: Vibration and Waves**

*Periodic motion - Simple harmonic oscillation - Damped oscillation - Forced oscillation - Application of damped and forced oscillations - Superposition of simple harmonic oscillations- traveling waves, standing waves, Beats - Transverse wave in wires - Longitudinal waves in rods - Application of longitudinal wave in open and closed air columns -Fourier analysis -Doppler effect*

### **PHYS 241: Thermodynamics**

*Fundamental concept in heat and thermodynamics, Thermal Equilibrium and zeroth law of thermodynamics, Ideal gases, First law of thermodynamic, Application of first law of thermodynamic - isothermic and adiabatic processes. Irreversible process - reversible processes. Carnot cycle - otto cycle - cleapeyron latent heat equation - Second law of thermodynamic, Entropy, Thermodynamic functions, Maxwell relation, Third law of thermodynamic, Phase change, Applications on thermodynamic laws.*

### **PHYS 291: Thermal physics lab.**



*Specific Heat of a Solid, Coefficient of Thermal expansion, Surface tension, viscosity coefficient, Newton's law of cooling, Determination of the Paraffin wax fusion temperature, Boyle's Law, resistivity dependence on temperature.*

### **PHYS 303: Mathematical Physics I**

*Determinants, Matrices, Solving linear equations and differential equations by matrices, Application on the motion of the rotation of the rigid body, Vector Algebra: Vector products, Position, Displacement, Vector transformation, Gradient, The Divergence, The Curl, Laplace operator, Line, Surface, and Volume Integrals, Gauss theorem, Stock's theorem, Green's theorem, Spherical polar coordinates, Cylindrical coordinates, The Dirac delta function.*

### **PHYS 321: Electromagnetism I**

*Review of vector Operations and algebra, Linear and rotational transformation of vectors, Vector field, Review of vector differential calculus: (gradient, the divergence, the curl, product rules, Second Derivatives), Review of integral Calculus: (linear, surface, and volume integrals), The fundamental theorem for: (calculus, gradient, divergence, curl), Curvilinear Coordinates: (spherical polar and cylindrical coordinates), The Dirac delta function in one and three dimension, The divergence of reciprocal square of radial distance, The Helmholtz theorem, Coulomb's law, The electric field, Continuous charge distributions, Divergence and curl of electrostatic fields, Field lines and flux, Gauss's law and its applications, Electric potential, The potential of a localized charge distribution, The work done to move a charge, The energy of a point charge distribution, The energy of a continuous charge distribution, Properties of conductors and induced charges, Surface charge and the force on a conductor, Capacitors, Poisson's equation, Laplace's equation in one, two and three dimensions, Boundary conditions and uniqueness theorems, Conductors and the second uniqueness theorem, The Method of images and induced surface charge and calculating force and energy, Multipole expansion and approximate potentials at large distances, The monopole and dipole terms, The electric field of a dipole, Polarization, Field of a polarized object, Induced dipole and dielectrics, Polar molecules, Bound charges, The field inside a dielectric and the electric displacement, Gauss's law in the presence of dielectrics, Boundary conditions, Linear Dielectrics: (susceptibility, permittivity, dielectric constant), Boundary value problems with linear dielectrics, Force and energy in dielectric systems, Magnetostatics and the Lorentz law, Magnetic fields and magnetic forces, The Biot-Savart law, The magnetic field of a steady current, The divergence and curl of the magnetic field, Ampere's law and its applications, Magnetic vector potential, Magnetostatic boundary conditions, Multipole expansion of the vector potential, Magnetic fields in matter and the magnetization, Magnetic materials: (diamagnets, paramagnets, ferromagnets), Torques and forces on magnetic dipoles, Effect of magnetic field on atomic orbits, The field of a magnetized object, Bound currents, The magnetic field inside matter and the auxiliary field, Ampere's law in magnetized materials, Boundary Conditions, Linear and nonlinear media, Magnetic susceptibility and permeability, Ferromagnetism.*

**PHYS 332: Optics**

*The nature of light, The superposition of waves, Interference of two-beams of light (division of the wave front & division of amplitude) Interferometers (Young's, Fresnel's biprism, Lloyd mirror, Fresnel's double mirrors, wedge interferometer, Newton rings, Michelson interferometer, Jamin & Mach-Zehnder refractometers), Interference of multiple beams, Fabry-Perot interferometer, Applications of interferometry. Diffraction, Fraunhofer diffraction (single slit, two slits, multiple slits) - diffraction grating - Fresnel diffraction (circular aperture & circular Obstacle). Polarization - polarization by absorption, reflection, refraction & double refraction - Optical active materials & polarimeter. Interference of polarized light, Analysis of polarized light, Electro-optics (Kerr effect & Pockels effect), Magneto - optics (Faraday effect)*

**PHYS 351: Modern Physics**

*Special Theory of Relativity: wave propagation - Michelson Morley experiment - Galilean transformation – Lorentz transformations – Relative velocity - Lorentz contraction – Time Dilation – relativity of mass – Mass and energy – Applications. The particlelike properties of Electromagnetic radiation: Electromagnetic waves – The photoelectric effect – black body radiation - The Compton Effect - X-rays. Waveslike properties of particles: De-Broglie hypothesis – Electron diffraction experiment of Davison and Germer – Electronmicroscope – Uncertainty principle, quantum theory. Atomic Structure: atomic properties - The Thomson model - Rutherford Model for atomic nuclei - alpha particle scattering - Atomic Spectra – Bohr theory of the hydrogen atom – Sommerfeld's Model – Failure of the Bohr theory Frank-Hertz experiment – The basic ideas of the Quantum Mechanics*

**PHYS 304: Mathematical Physics**

*Complex numbers, Analytic functions - Limits and Continuity – Analyticity - The Cauchy-Riemann Equations, Elementary Functions, Complex Integration – Contours - Independence of path - Cauchy integral theorem - Bounds for analytic Functions, Series representations for analytic functions, Residue Theory. Conformal Mapping- Invariance of Laplace's Equation - Geometric Considerations - Bilinear Transformations - The Schwartz-Christoffel Transformations.*

**PHYS 322: Electromagnetism II**

*Electromotive force, Ohm's law, Motional electromotive force, Electromagnetic induction, Faraday's law, The induced electric field, Inductance, Energy stored in magnetic fields, The modified Ampere's law, Maxwell's equations in vacuum, Maxwell's equations in matter, Boundary conditions, Conservation laws and the continuity equation, Poynting's theorem, Newton's third law in electrodynamics and momentum, Maxwell's stress tensor, Conservation of momentum, Angular momentum, Electromagnetic waves in one dimension, The wave equation, Sinusoidal waves, Boundary conditions: reflection and transmission, Polarization, Electromagnetic waves in vacuum, Monochromatic plane waves, Energy and momentum in electromagnetic waves, Electromagnetic waves in matter, Propagation in linear media, Reflection and transmission at normal incidence, Reflection and transmission at oblique incidence, Absorption and dispersion, Electromagnetic waves in conductors, Reflection at a conducting surface, The*

*frequency dependence of permittivity, Guided waves and wave guides, TE waves in a rectangular wave guide, The coaxial transmission lines, Electric dipole radiation, Magnetic dipole radiation, Radiation from an arbitrary source, Power radiated by a point charge, Radiation reaction with matter.*

**PHYS 392 : Optics Lab**

*Prism spectrometer (refractive index and dispersion), Grating spectrometer, Fresnel's biprism with He-Ne laser, Fresnel's double mirrors with He-Ne laser, Newton's rings, Michelson interferometer, Mach-Zehnder-interferometer, Diffraction at a single slit, Diffraction at double slits, Diffraction at one-and two-dimensional gratings, Diffraction at a single slit measuring and evaluating with Video Com, Polarimeter and optical activity, Abbe's refractometer, Inverse square law of light radiation and absorption coefficient of glass or plastic materials, Polarization of light.*

**PHYS 342: Statistical Physics**

*Probability, One random variable, Some important probability distributions, Many random variables, Sums of random variables and the central limit theorem, Rules for large numbers, entropy, Kinetic theory of gases, Maxwell's distribution of the velocities of gas molecules and its applications, Distribution function of the energy of molecules, Liouville's theorem, Equilibrium properties, The microcanonical ensemble, Two-level systems, The ideal gas, Mixing entropy and the Gibbs paradox, The canonical ensemble, Canonical examples, The Gibbs canonical ensemble, The grand canonical ensemble, Quantum statistical mechanics, Maxwell-Boltzmann distribution, Bose Einstein distribution, Fermi-Dirac distribution, Vibrations of a solid, Black-body radiation, Quantum microstates, Quantum macrostates, Ideal quantum gases, Hilbert space of identical particles, Canonical formulation, Grand canonical formulation, The degenerate fermi gas, The degenerate bose gas.*

**PHYS 352: Quantum Mechanics I**

*Reviews of the fundamental experiments in modern physics, the need for quantum mechanics. Wave packet and uncertainty principle, Schrödinger equation for free particle, Continuity relation, The dynamical variables and calculating the expectation values, Schrödinger equation with a potential in one dimension, Dynamical variables and calculating the expectation values in momentum space, Commutation relations. Hermitian operators, Linear operators, Completeness relation and orthonormality. Schrödinger equation in three dimensions, The fundamental postulates of quantum mechanics, Particle in an infinite well, Spectral expansion theory, The parity, Constants of motion and conservation laws, Momentum eigenfunctions and free body, One-dimensional potentials: The potential step, The finite potential well at scattering and bound states, The potential barrier, The delta-function potential at Scattering and Bound states, Simple harmonic oscillator, Oscillator eigenfunctions and eigenvalues, Ladder operators and dynamical variables, Schrödinger equation in three dimensions in Cartesian coordinates, Schrödinger equation in three dimension curvilinear coordinate system, Angular momentum and its eigenfunctions and eigenvalues, The addition of angular momentum, The central potentials.*

**PHYS 393: Electromagnetism Lab**

*Practical part:* Measurement of the electric charge by Millikan oil drop method, measurement of  $e/m$  of the electron, Verification of Biot - Savart law, Verification of Faraday's law, Transformers, Measuring the force on current carrying conductors in a homogenous magnetic fields, RLC circuits, Generators, Motors, Magnetic moment of magnetized rod, Helmholtz coils, Magnetic induction.

**PHYS 494: Modern Physics Lab**

*The Balmer series of hydrogen and determination of Rydbergs constant, Franck- Hertz experiment, characteristics of microwaves, Fabry – Perot interferometer, Kerr effect, Faraday effect, Pockels effect, Zeeman effect, Planck s constant, Studing X-ray spectra.*

**PHYS 423: Electronics**

*Analog Electronics: The P-N junction diode and Zener diode with their applications – Junction Field effect transistor - Bipolar junction transistor (Bias and amplifiers: JFET & BJT) – Differential and Operational Amplifiers, Introduction to Feedback Circuits, Multivibrators and Oscillators.*

*Digital Electronics: Binary and Hexadecimal System, Logic Gates, Karnaugh Maps Flip Flops, Shift Registers, Counters, Memories.*

*Practical part: P-N junction application (half-wave rectifier, full-wave rectifier, clampers and limiters, Zener regulation) - Transistors JFET & BJT amplifiers. Amplifiers with 741 (Inverting & Non inverting Amplifiers, Active Filters, Wien Oscillator, Astable Multivibrator). Half and Full Adder (7483), Flip Flop (7474-7476), Shift Register (7495-74194), Counters (7493-74193).*

**PHYS 453: Quantum Mechanics II**

*Dirac notation, Vector space algebra and Hilbert space, Rephrasing wave mechanics and operator methods in abstract view, Angular momentum commutation relations, Raising and lowering operators for angular momentum, Expansion theory in abstract view, Matrix representation of angular momentum operators, General relations in matrix mechanics, Eigenstates of spin  $1/2$ , The intrinsic magnetic moment of spin  $1/2$  particles, Addition of two spins, Addition of Spin  $1/2$  and orbital angular momentum, Time-independent perturbation theory and energy shifts, Degenerate perturbation theory, The Stark effect, Hyperfined splitting, Variational principle and its applications, The WKB approximation, Time-dependent perturbation theory, The interaction of charged particle with electromagnetic field, Two level-system, emission and absorption of radiations, spontaneous emission, Transition rate, selection rule, scattering theory, Partial wave analysis, The Born approximation.*

**PHYS 471: Solid State Physics I**

*Different states of matter, classification of solids, crystal structure (Bravais lattices & Miller indices), methods of determination of crystal structure (X-ray diffraction, electron and neutron diffraction), crystal defects, crystal binding (interatomic forces, types crystal bonds), lattice dynamics (crystal vibration modes and phonons), thermal properties of insulators (specific heat of insulators: classical model, Einstein's model, Debye model, thermal conductivity of insulators), Dependence of thermal conductivity on temperature, free electron theory (classical model of free electron, Fermi gas of free electrons, Maxwell-Boltzmann distribution, Fermi-Dirac distribution function), band theory (zone theory and tight binding theory).*

**PHYS 481: Nuclear Physics I**

*Properties of the nucleus: Constituents – determination of nuclear charge, radius and mass – Nuclear binding energy. Natural Radioactivity: Decay law-Nuclear stability-Radioactivity and theory of transformation. Artificial Radioactivity: Discovery of artificial radionuclides – Transuranium elements-Interaction of radiation with matter: Interaction of heavy elements - interaction of light electrons - interaction of gamma rays with matter - interaction of neutrons with matter. Radiation Detectors: Gas detectors - Scintillation detectors - solid state detectors. Nuclear Reactions: Reactions of matter by gamma-rays - reactions by alpha particles - reactions by protons - reactions by neutrons. Nuclear fission: Discovery of Nuclear fission – theory of Nuclear fission. Nuclear fusion: Energy production in stars – control of thermonuclear reactions. Nuclear accelerators*

**PHYS 495: Practical Training**

*The student carries out a research under the supervision of one of the Staff members in one of the following branches: Theoretical Physics - Nuclear Physics - Solid State Physics - Fiber Optics – Laser – Plasma. The student learns how to write a report and trains on how to use research equipments or any necessary softwares as a preparation to the project course.*

**PHYS 454: Atomic and Molecular Physics**

*Introduction: Comparing between atomic emission spectroscopy and atomic absorption spectroscopy; Optical spectroscopy, Atomic spectrum, Atomic emission / absorption spectrophotometry Molecular spectroscopy, Spectroscopy of inner electrons. Zeeman's effect, Sodium spectrum, Effect of magnetic field on the energy levels of atom. Theory of magnetic energy, Anomalous Zeeman's effect and Lande splitting factor. Molecular Spectra of diatomic molecules. Vibrational energy levels in both classical mechanics and quantum mechanics. Rotational spectra of diatomic molecule in gaseous state and rotational energy levels. Molecular spectra; Anharmonic Oscillator- Non Rigid Rotator - Infrared Vibration-Rotation spectra; visible spectrum, IR spectrum, RBS spectra, XRD spectrum - measurements of Absorbance, Transmitting and Reflecting using double*

*beam Spectrophotometers in all ranges of wavelengths (UV-VIS-NIR-IR), Normal modes of vibrations; Natural of infrared absorption, Basic Laser principles, Laser behavior, Properties of laser radiations, Different types of lasers, Laser spectroscopy, The total losses of the laser system, Transmission at the mirrors. Absorption and scattering by the mirrors, Absorption in the laser medium. Diffraction losses at the mirrors, The Ruby Laser - Three Level Laser (Helium-Neon Laser) - Four Level Laser (Carbon dioxide Laser), Laser applications.*

**PHYS 496: Solid State Physics Lab**

*Studying the characteristics of the solar cell - electron diffraction experiments - characteristics curves of an optical (photo) resistor - the electron spin resonance (ESR) - Calculation of the energy gap of germanium by an electrical method - determination of the thermal coefficient of a noble metal (platinum) by computer - the magnetic susceptibility of some materials and its classification – X-ray spectroscopy and calculation of Planck's constant and Miller indices of crystal planes in NaCl single crystal - Thermoelectric effect in semiconductors (calculation of Seebeck, Peltier and Thomson coefficients) - Superconductivity and determination of the transformation temperature of YBCO specimen by computer – Determination of the absorption coefficient of Aluminum for X-ray, Hall effect, Studying the crystalline structure by using the field effect microscope.*

**PHYS 497: Nuclear Physics Lab**

*Statistical nature of Radioactive decay law – Determination of the half life of Thoron isotope  $Rn^{220}$  - Rutherford Scattering - Attenuation of gamma radiation - Absorption of beta radiation passing through different materials – Inverse square law in case of gamma-rays - Velocity of alpha particle - Backscattering of beta particles - Alpha spectroscopy of radioactive elements - Determining the energy loss of alpha particles in aluminum and in gold - Recording a beta spectrum with a scintillation counter - Effect of a magnetic field on beta particles motion.*

**PHYS 499: Project**

*The student carries out a research under the supervision of one of the Staff members in one of the following branches: Theoretical Physics - Nuclear Physics - Solid State Physics - Fiber Optics – Laser – Plasma. The student submit a report about his work, and is evaluated by a committee selected by the department.*

**ELECTIVE COURSES****PHYS 406: Mathematical Physics III**

*Series Method for solving linear differential equations, Legendre polynomials, Hermite polynomials, Lagurre polynomials, Bessel Functions, Fourier transformation and its application, Laplace transformation and its application, Eigenvalue problem, Differential equations of Boundary value problem.*

**PHYS 361: Health physics**

*Review of the sources of radiation, basic dosimetry, and hazards of ionizing radiation, Radiation safety guides and codes in the environment, industry, medical and nuclear facilities, Techniques for the detection, use, and safe handling of radiation sources, Radiation protection and shielding: monitoring of sources, planning of facilities, waste management, and radiation protection for the public, radiation detection and counting statistics. Radiation laws and regulating agencies.*

**PHYS 362 : Bio-Physics**

*Biomechanics Forces affects on our bodies. Vector analysis. Levers and equilibrium of rigid bodies. Stress-strain curve. Young's and Shear modulus for materials and biological tissues. Stress-Strain Curve - Young's and Shear Modulus for materials and applications. Properties of Fluid. Viscosity and Surface tension. Bernoulli's Equation and its applications. Effect of gravity and acceleration on blood pressure. Nature of sound and sound intensity level. Ultra-sound, production and its applications in diagnostic and treatment. Nervous system. And electricity within the body. Equilibrium potential and Nernst equation. Factors affecting the propagation of action potential. Action potential measurements of some organs; EGG, EEG and ERG. Nonionizing Radiation, Physical and biological effects.*

**PHYS 355: Laser physics**

*Absorption and Emission of light, Einstein Relations, Population inversion, Gain coefficient, Optical resonator, Laser Modes, solid state lasers, semiconductor lasers, Gas lasers, Dye lasers, Free electron laser and some new lasers. Laser beam properties, Line width, Divergence, coherence, Brightness, Focusing properties of laser, Q - switching, Frequency doubling, Phase conjugation. Applications: medical, industrial, Military, Scientific, Holography and compuncions.*

**PHYS 473: Semiconductor physics**

*Semiconductor Fundamentals: Carrier distribution functions, Carrier densities, Carrier Transport, Carrier recombination and generation, Continuity equation, The drift-diffusion model.*

*P-N Junctions: Electrostatic analysis of a P-N diode, The P-N diode current, Reverse bias breakdown.*

*Bipolar Junction Transistors:* Structure and principle of operation, Ideal transistor model, Non-ideal effects, Base and collector transit time effects, BJT circuit models, BJT Technology.

*MOS Capacitors:* Structure and principle of operation, MOS analysis.

*MOS Field-Effect-Transistors:* Structure and principle of operation, MOSFET models, Threshold voltage, MOSFET Circuits and Technology.

### **PHYS 205: Introduction to Astronomy**

*Introduction: modern astrophysics – History of astronomy. Laws of motion: Kepler laws, Gravitational law, Newton's modified law, Orbits of planets, speed in the orbit, proceeding velocity. Solar system: planets: 1- Earth-like planets: Mercury, Venus, Earth, Mars. 2 - giant planets (like Jupiter): Jupiter, Saturn, Uranus, Neptune. 3 – satellites, the rings, comets, asteroids. Stars: Stars dimensions, Destiny, Luminosity, spectrum types, HR form, double stars and stars masses. Evolution of stars. Galaxies: Milky Way, types of galaxies, galaxies properties, anomalies galaxies, galaxies crowds, the universe.*

### **PHYS 474: Materials science**

*States of matter (liquid, crystalline and vitreous); crystal structure of metals; Metallography (reflecting optical microscope, transmission electron microscope) specimen preparations; Mechanical testing (hardness & tensile test); Defects in crystals (point defects and dislocations); Diffusion in solids; (phase transformation and phase diagrams) strengthening mechanisms (alloying, cold work, precipitation & fiber strengthening); heat treatment of steel & T T T curves*

### **PHYS 463: Medical Physics**

*Introduction to Medical Physics, Electromagnetic Spectrum and Radiation, Basic Interactions of ionizing and non-ionizing Radiation with biological matter. Radiological Imaging: Introduction to Imaging, Conventional X-ray imaging, Computed Tomography, Diagnostic ultrasound. Radiation therapy: Introduction to Radiotherapy Physics Linear Accelerators, Introduction to External Beam Treatment Planning, Brachytherapy, Machine calibration and quality assurance. Magnetic Resonance Imaging: Introduction, Basic NMR Physics, MR Imaging Principles, Applications. Nuclear medicine: Introduction, Isotopes, PET scan.*

### **PHYS 407: Computational Physics**

*Introduction: Computation and Science, The emergence of Modern Computers, Computer Algorithms and Languages: Applications: Newton and Kepler Laws. Numerical linear Algebra: Systems of linear equations, Eigen values and Eigen vectors. Interpolation, Extrapolation and Data Fitting: Polynomial Interpolation, Data fitting, Least*



*squares fitting. Ordinary differential equations: Initial-value problems, The Euler and Picard methods, The Runge-Kutta method, Chaotic dynamics of the driven pendulum, Boundary -value and eigenvalue problem, The one-dimensional Schrödinger equation.*

**PHYS 485: Neutrons Physics and Reactors**

*Neutron reactions: cross-sections, attenuation, reaction rate, fission cross-section. Nuclear fission, fission yield, Energy distribution among fission neutrons and fragments, regeneration factor. Thermal neutrons: energy distribution, effective cross section, moderation, average energy loss, Average energy logarithmic decrement, SDP, MR and resonance escape probability. The Nuclear chain reaction: neutron cycle, thermal utilization factor and calculating the four factors formula.*

**PHYS 484: Radiation Physics**

*Definition of radiation quantities, doses and their units, instruments for measuring personal doses, radiation monitoring and radioactive contamination, biological effects of radiation, external and internal radiation exposure, radiation protection and shielding, recommendations of IAEC, protection against different radiations sources, decontamination, radioactive waste management*

**PHYS 475: Renewable Energy**

*Energy Fundamentals, Fossil fuels, Renewable energy part I:- Solar radiation and solar energy (thermal, photovoltaics and electrochemicals) Renewable energy Part II: Alternatives (hydropower, wind power, ocean thermal energy conversion, biomass, geothermal energy, tidal and wave energy), Energy conservation & storage, energy and transportation, air pollution and environment*

**PHYS 456 : Plasma physics**

*Introduction (Definition of Plasma, Processing Plasmas, Plasma Physics and Plasma Chemistry). Single Particle Motions (Orbits in direct current electric and magnetic fields, Collisions, Transport Phenomena, Chemical Reactions in Plasmas). Plasma Statistical Mechanics (Ensemble Theory, Liouville's Theorem, Particle Distribution Functions, the Boltzmann and Vlasov Equations). Plasma Magnetohydrodynamics (MHD Equilibrium, Magnetic Confinement, Stability). Waves in Cold Plasmas (Wave Equations, Dispersion Functions, The effects of Magnetic Fields). Waves in Hot Plasmas (Acoustic and Magnetoacoustic waves, Landau Damping, Nonlinear Waves). Kinetic Theory and Radiation (Cyclotron emission, Bremsstrahlung). Applications (Fusion, Plasma-Aided Manufacturing).*

**PHYS 483 : Elementary Particle Physics**

*Elementary particles: properties, classifications and detections. Fundamental forces between elementary particles. Symmetries and their role in studying elementary particle physics.*

*Strong force. Electromagnetic force. Weak force. Relativistic quantum mechanics. Feynman diagram.*

**PHYS 472 : Solid State Physics II**

*Semiconductors and its applications (semiconductor materials - Band theory in semiconductor - energy gap in semiconductors – holes - Fermi level in semiconductor - effect of impurities on semiconductors – applications) Magnetism in solid state (magnetic moments - origin of magnetism – diamagnetism – paramagnetism – Ferromagnetism - molecular field theory - exchange energy – Antiferromagnetism – Ferrimagnetism - hysteresis loop - magnetic domains - magnetic resonance) Superconductivity Electrical properties of Superconductors - magnetic properties of superconductors - thermodynamic properties of superconductor - electrodynamic properties of superconductor (London theory - Ginzberg Landau theory) type I and type II superconductors - cooper pair - microscopic theory of superconductors (BCS theory) Dielectric properties of solids (polarization and dielectric constants, electric damage for insulators - Ferroelectric) Optical properties of solids (Reflection, absorption and emission - optical conductivity)*

**PHYS 482: Nuclear Physics II**

*The fundamental forces in nature, quark theory and the origin of nuclear force, inter nucleon force, nuclear reactions and reaction cross section (Coulomb scattering, optical model, resonance reactions and Breit-Wigner formula), nuclear models (liquid drop model, shell model, collective model) elementary particles, fundamental symmetries and gauge theory, lepton-hadrons interactions, quantum chromo dynamics, electro-weak interactions, physics of modern accelerators.*