DEPARTMENT OF PHYSICS

LAHORE COLLEGE FOR WOMEN UNIVERSITY, LAHORE

SELF-ASSESSMENT REPORT

MS

Submitted to

Quality Enhancement Cell,

Lahore College for Women University, Lahore

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T A B L E O F C O N T E N T S

CRITERION 1: PROGRAM MISSION, OBJECTIVES AND OUTCOMES

Standard 1-1: The program must have documented measurable objectives that support college and institution mission statements.

- Document institution, college and program mission statements.
- State program objectives. Program educational objectives are intended to be statements that describe the expected accomplishments of graduates during the first several years following graduation from the program.
- Describe how each objective is aligned with program, college and institution mission statements.
- Outline the main elements of the strategic plan to achieve the program mission and objectives.
- Provide for each objective how it was measured when it was measured and improvements identified and made. Table 4.1 provides a format for program objectives assessment.

MS PROGRAM

Mission Statement:
MS research intensive program is designed to attract doctoral level students with excellent academic potential, to prepare them to be the best in the field of science of technology and to become leading researchers to demonstrate excellent contribution to the knowledge in the different field of Physics.

LEARNIN GOBJECTIVES

- To generate and disseminate knowledge.
- To engage in research activities in the field of Physics.
- To educate future generation of Physicists
- To do fundamental research that contributes to its educational and research responsibilities.
- To produce graduates having strong analytical skills
- To gain practical experience in solving different physics problems.

Objectives	How Measured	When Measured	Improvements Identified (Based on outcome Examination)	Improvements Made
1	Mid term Test	As per tentative date sheet from examination branch	Enhancement in learning	To encourage creativity analytical thinking, critical analysis and innovative problem solving kills.
2	Assignment		Enhancement in learning	To create advanced skills in teaching and research
3	Final Test	As per tentative date sheet from examination branch	Enhancement in learning	To encourage creativity analytical thinking, critical analysis and innovative problem solving kills.
4	Quiz		Confidence and competition developed	To develop within each candidate the expertise and skills necessary to be an effective educator and faculty member.
5	Final exam	As per tentative date sheet from examination branch	Enhancement in learning	Students can provide innovative and creative solutions to Physics problems

OUTCOMES

- Students can apply knowledge of Physics and other specialties in everyday of life.
- Students can formulate hypothesis, design and conduct experiments as well as analyze to interpret data.
- Students can work independently with multi-disciplinary team.
- Students can use the techniques, skills and modern scientific tools necessary for professional practice.
- Quiz and assignments based learning, discussion forum with teachers.
- To complete 18 credit hours for MS course work as per HEC rule.

Table 4.1 Program Objectives Assessment

Standard 1.2: The program must have documented outcomes for graduating students. It must be demonstrated that the outcomes support the program objectives and that graduating students are capable of performing these outcomes.

- Describe how the Program Outcomes support the Program Objectives. In Table 4.2 show the outcomes that are aligned with each objective.

Program Objectives	Program Outcomes			
	1	2	3	4
To provide opportunity for considerable personal development.	Students can provide significant intellectual contributions in the fields of Physics.	Students can communicate effectively both orally and in written form	Students can provide innovative and creative solutions to Physics problems	Students can communicate effectively both orally and in written form
To encourage creativity analytical thinking, critical analysis and innovative problem solving kills.	Students can provide significant intellectual contributions in the fields of Physics.	Students with advanced capabilities in leadership and management	Students with advanced capabilities in leadership and management	Students can conduct empirical research and think analytically
To develop within each candidate the expertise and skills necessary to be an effective educator and faculty member	Students can provide significant intellectual contributions in the fields of Physics.	Students with advanced capabilities in leadership and management	Students with advanced capabilities in leadership and management	Students can communicate effectively both orally and in written form
To create advanced skills in teaching and research	Students can provide significant intellectual contributions in the fields of Physics.	Students with advanced capabilities in leadership and management	Students with advanced capabilities in leadership and management	Students can communicate effectively both orally and in written form

Table 4.2: Outcomes versus Objectives

- Describe the means for assessing the extent to which graduates are performing the stated program outcomes/learning objectives.

1. Conducting a survey of graduating seniors every semester.
2. Conduct a survey of alumni every two years.
3. Conduct a survey of employers every two years.
4. Carefully designed questions asked during senior project presentations. These questions should be related to program outcomes.
5. Outcome examinations.

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The program outcomes are the byproducts of the program objectives and are interrelated. An example of interrelation between the program objectives and the program outcomes is shown in the following table.

Program Objectives	**Program Outcomes**					
	Students are able to discriminate between right and wrong	**Students have clear concepts of Physics**	**Handling of experimental apparatus**	**Literature review**	**Selection of research topic**	**Analysis of experimental results**
Character building of students	*	_	_	_	_	_
To learn students basic knowledge of different fields of Physics	_	◊	_	_	_	_
To implement gained knowledge through experimental labs	_	_	◊	_	_	_
To conduct research projects effectively	_	_	_	◊	◊	◊

Legend: *Denotes **Substantial** Contribution to the objectives

◊ Denotes **Moderate** Contribution to the objectives

_Denotes **No** Contribution to the objectives

Standard 1.3: The results of program's assessment and the extent to which they are used to improve the program must be documented.

Describe the actions taken based on results of periodic assessments.

- Describe major future program improvements plans based on recent assessments.
- List strengths and weaknesses of the program.
- List significant future development plans for the program.

Answers:

- Courses outline was modified and more skills of teaching was added to meet modern time requirement.
- Program is satisfactory.
- New courses were introduced according to updated research based trends e.g: Plasma Physics-I, Plasma Physics-II, Fuel Cell Fundamentals & Technology, Renewable Energy Technology, Non-Linear Physics-I, Colloids & Nanoparticles.
- Lack of lab characterization facilities and chemical availability to meet current levels of research.
- Students can apply skill based knowledge of physics and other specialties to society.
- To improve the gap of academia & industrial research.

Standard 1.4: The department must assess its overall performance periodically using quantifiable measures.

1.4.1 Performance Measures:

Answer: Performance of students is measured by their results in test, quiz and exams. Faculty performance is assessed by the students' involvement in the particular subject and percentage of their results.

Ta**ble 3: No. of Students Enrolled (2017-18)**

Program	**Session**	**No. of Students**
	2018	33
	2017	31

ii) Table 4: Student-Faculty Ratio (MS) (2017-18)

Year	**No. of Students**	**No. of Faculty Members (MS)**	**Student-Faculty ratio**
2018	33	22	3:2
2017	31	22	3:2

iii) Table 5: No. of Students Passed Out (2017-18)

Program	**Passing out Year**	**No. of Students**
MS	2018	32
	2017	30

IV) Table 6: Percentage of Honor Students & Attrition Rate

Year	**%age of Honor Students** **Criteria:** CGPA 3.75 and above	**Attrition Rate** (Admitted –pass out) *100 Admitted
2017-18	05 (16.67%)	0%

v) Table 7: <u>Faculty Training, Seminars and workshops (Appendix A)</u>

Year	No. Of Trainings, Seminars and workshops
2017	5
2018	5

vi) <u>Papers Published at National & International Level</u>

Table 8: <u>Number of Publications (Appendix B)</u>
<u>Research Publications during July 2012-June 2013</u>

Year	**Papers published**
2018	28
2017	28

vii. <u>Books in Library</u>
400 books (Approx.) of Physics are available in Postgraduate Library PG-I

Research Areas

The Faculty is involved in research in the following areas:

1. Experimental: Material science
2. Theoretical: Plasma Physics

Collaborations

1. NILOP, Islamabad
2. CSSP, University of the Punjab
3. GCU, Govt. College University.
4. UET, Lahore.

Departmental Achievements (others)

- International Seminar on Physics (ISP-18) 17th to 19th April, 2018, Lahore Pakistan was organized by Physics Department at LCWU, Lahore.
- High research papers incentive achievement by Physics department in 2018 and 2019

Honors and Awards

Research Productivity award Dr. Zeba Israr 2014.

CRITERION 2: CURRICULUM DESIGN AND ORGANIZATION

Semester	**Course No:**	**Category (Credit Hours)**				
		Maths & Basic Sciences		**Core Courses**	**Humanities & Social Sciences**	**Technical Electives**
		Maths	**Basic Sciences**			
1st						
	MS/Phy-501			Fundamental of Thin Film		
	MS/Phy-502			Semiconductor Physics		
	MS/Phy-503			Plasma Physics-I		
	MS/Phy-504			Material Science		
2nd						
	MS/Phy-505			Characterization Techniques		
	MS/Phy-506			Semiconductor Electronic Devices		
	MS/Phy-507			Colloids & Nanoparticles		
	MS/Phy-508			Ceramic Processing		
Optional						
	MS/Phy-509			Plasma Physics-II		
	MS/Phy-510			Atmospheric Physics		
	MS/Phy-511			Biomaterials		
	MS/Phy-512			Research Methodology		
	MS/Phy-513			Laser Physics		
	MS/Phy-514			Bio Physics		
	MS/Phy-515			Fuel Cell Fundamentals &		

				Technology		
	MS/Phy-516			Renewable Energy Technology		
	MS/Phy-517			Hydrogen and Fuel Cells		
	MS/Phy-518			Nano- Physics		
	MS/Phy-519			Nonlinear physics-I		
Total	19					
Minimum requirement	07					

Table 4.3 **Curriculum course requirements**

Standard 2.1: The curriculum must be consistent and supports the program's documented objectives.

- Describe how the program content (courses) meets the program objectives.
- Complete the Table 4.4 linking courses to program outcomes. List the courses and tick against relevant outcomes. A sample of such a matrix is shown below.

Courses or Group of Courses	**Program Outcomes**			
	1	**2**	**3**	**4**
1.Characterization Techniques	The students can analyze the different properties of the materials.	like structure, morphology, magnetic, thermal, electrical and dielectrical properties etc.	They can suggest the applications of the material on the basis of their properties	They learn different data base software and also simulation software for analyzing the material characteristics
2. Material Science	Learning of different material formation phases	Students are able to fabricate materials with different techniques	They are able to describe the defects in the materials	
3.Colloids and Nano-particles	introduction and overview of Nano and colloids – Basic concepts (man-made and Nature) synthesis methods, properties, basics and fabrication techniques. With main focus on colloidal chemistry.	Students are able to consult different books, literature and lectures	Students are able to describe nano, their properties, implementation into devices for diverse applications in various fields.	They can target their research based work.

4.Ceramics	After taking research reading II, they are able to write down the review articles	They are able to seek new problems	They are able to write their PhD synopsis	They get vast knowledge, learn research methodology
5.Semiconductor Physics	They are able to study the structure of different semiconductor material	They are able to explain the band theory	They are able to describe the significance of semiconductor material in electronic industry	They able to suggest the new semiconductor material with doing of different aterial and also their properties
6. Plasma Physics - I	After taking this course the students are able to understand the fourth state of matter "plasma" and different electrostatic and electromagnetic waves and their applications in astrophysical objects	They are capable to solve different research papers	They learn how to describe the and understand different phenomenon in plasma	They have ideas to do numerical problems about plasma physics.
7. Fundamental of Thin Films				
8. Semi-conductor electronic devices	How to design and fabricate electronic devices.	They are able to describe the significance of semiconductor material in electronic industry	They able to suggest the new semiconductor material with doing of different material and also their properties for device fabrication.	

Table- 4.4: Courses versus Program Outcomes

Standard 2.2: Theoretical background, problems analysis and solution design must be stressed within the program's core material.

Table 13: **Elements of Courses**

Elements	**Courses (MS)**	**No of Courses**
Theoretical background	1: Subjects are designed on the basis of pure physics background. To develop the skills and expertise in students to meet up the upcoming world-wide research and development. The program emphasizes the theoretical side of physics but includes experimental aspects. 2: It also includes a range of courses in pure and applied Physics and also an introduction to computing and research based subjects. Some of the topics covered nano technology, ceramics, characterization and analysis, semi-conductor devices, laser and material science etc. 3: Espacialize and professional man power in the market. Graduates may also choose to go on to a career in teaching, institutes, organizations, medical institutes, Labs, hospitals, industries etc. 4: Availability of Highly qualified faculty and student choice for optional courses also matter for particular course.	08
Problem solving	All courses are designed to provide students with a solid background for further study or work in any area of experimental or theoretical physics. It includes plasma physics and characterization and analysis, semiconductor devices and nano-synthesis to be problem solving. Having a large mathematics and analysis component as an excellent foundation for work in almost any numerate or logical discipline like physics.	
Solution design	All courses are designed to be focus for particular solution through research both theoretical and experimental. First the Research objective, than accomplishment through experiments, analysis by using equipments and soft wares and computer skills to meet the advance research levels.	

Standard 2.3: The curriculum must satisfy the core requirements for the program, as specified by the respective accreditation body.

Answer:

1. Yes, it is satisfied as described by HEC rule.
2. 16 years of schooling or 04 years of education.
3. Minimum 50 % cumulative score will be required in admission test as accomplish by department.
4. For award of MS degree 18 credit hours of coursework along with the 6 credit hours of research are fulfilled.

Standard 2.4: The curriculum must satisfy the major requirements for the program as specified by the respective accreditation body. Answer: 1.The overall curriculum fulfills 18 credit hours of coursework along with the 6 credit hours of research work as required by HEC rule. 2.The syllabus of each course is annually reviewed by Board of Studies. 3.Research work of MS students is checked for plagiarism as per HEC rule. 4.The final presentation of research work and viva exam is conducted in the presence of external examiner from other universities as per HEC rule.

Standard 2.5: The curriculum must satisfy general education, arts, and professional and other discipline requirements for the program, as specified by the respective accreditation body/council.

- HEC Requirements (Accreditation Council Requirements if any) All courses and thesis are HEC recognized at National Level for MS Degree.
- Program Requirements A minimum of 16 years of education is required for applying to the MS Programme in Physics. Applicants are expected to have obtained their Bachelor's degree (CGPA =2.5) from national or foreign institutions that are accredited or recognized by the Higher Education Commission (HEC) of Pakistan.
- Deviations as per HEC Rule
- Justification for Deviations **N.A**

Programs	Maths & Basic Sciences	Engineering Topics	General Education	Others
MS	Pure Physics and Maths Background	N.A	N.A	N.A

Table A.1 Minimum Requirements for Each Program

(Program Semester Credit hours)

- ➢ MS I and II: Course work (Semester I and II) 12 credit hours per semester
- ➢ Research and Thesis (Semester III and IV) 12 credit hours

Standard 2.6: Information technology component of the curriculum must be integrated throughout the program.

- Indicate the courses within the program that will satisfy the standard.
  - ➢ All courses
- Describe how they are applied and integrated though out the program.
  - ➢ Information technology is used for the research purpose like in simulation, modeling, characterization and analysis.
  - ➢ Also in delivering lecture, taking presentations of students, etc.

Standard 2.7: Oral and written communication skills of the student must be developed and applied in the program.

- Indicate the courses within the program that will satisfy the standard.

Course code	Course Title	Credit Hours
	Semester- I	
MS/Phy-501	Fundamentals of Thin Films	3(3+0)
MS/Phy-502	Semiconductor Physics	3(3+0)
MS/Phy-503	Plasma Physics-I	3(3+0)
MS/Phy-504	Material Science	3(3+0)
Total Credit Hours		**12**
	Semester- II	
MS/Phy-505	Characterization Techniques	3(3+0)
MS/Phy-506	Semiconductor Electronic Devices *	3(3+0)
MS/Phy-507	Colloids & Nanoparticles *	3(3+0)
MS/Phy-508	Ceramic Processing	3(3+0)
Total Credit Hours		**12**

Optional Courses *

Sr. No	The student will opt four courses from the following list		
	Course code	**Course Title**	**Credit Hours**
1.	MS/Phy-509	Plasma Physics-II	3(3+0)
2.	MS/Phy-515	Fuel Cell Fundamentals & Technology	3(3+0)
3.	MS/Phy-519	Non-Linear Physics-I	3(3+0)

- Describe how they are applied.
  In all courses, oral and written communication skills are developed via presentations, assignments, quiz and especially the discussion forum among faculty/ students and students /students also.

  Basic knowledge about equipment handling is given to analyze the samples

CRITERION 3: LABORATORIES AND COMPUTING FACILITIES

Indicate for each lab the following:

- Laboratory Title **MS-Synthesis and Research Lab.**
- Location and area **Physics department**
- Objectives
  1: To produce skills and expertise in handling the equipments and tools, confidence for practical work through experiments in different communities at both national and international levels.
  2: To provide extensive hands-on training in technology, analysis, laboratory skills, and field techniques.
- Adequacy for Instruction: Satisfactory and modern equipments, Trained faculty and technicians, collaborations with other institutes as per HEC rule.
- Courses taught " Specifically, Characterization and analysis Techniques"
- Software available
  Many software available like Image J, Diamond, All equipment deals with soft wares for samples analysis like SEM (Scanning Electron Microscope), TEM (Transmission Electron Microscope), AFM, XRD.
- Major Apparatus All synthesis apparatus is available.

- Major Equipments
  Collaborated with Central lab and other institutes as per HEC rule.
  Safety regulations All applied to handle equipments and to work in synthesis lab.

Standard 3.1: Manuals/documentation/instructions for experiments must be available and readily accessible to faculty and students.

- Explain how students and faculty have adequate and timely access to the manuals/documentation and instructions.
  - Students and faculty can get manuals for experiments from lab attendants.
- Benchmark with similar departments in reputable institutions to identify short comings in laboratory.
  - **Satisfactory**

Standard 3.2: There must be adequate support personnel for instruction and maintaining the laboratories:

- Indicate for each laboratory, support personnel, level of support, nature and extent of instructional support

1. Only synthesis lab is in working condition with the available equipment under the supervision of concerned faculty members in the department.

2. Characterization for experimental research is done by central lab LCWU, LUMS, GCU, NILOP

Standard 3.3: The university computing infrastructure and facilities must be adequate to support program's objectives:

- Describe how the computing facilities support the computing component of your program.
- Benchmark with similar departments in reputable institutions to identify short comings in computing infrastructure and facilities if any
  - -Students are facilitated by IT department's computer lab. In parallel, they take advantage of student's laptop scheme.
  - Computing facilities are satisfactory.

<u>CRITERION 4: STUDENT SUPPORT AND ADVISING</u>

Standard 4.1: Courses must be offered with sufficient frequency and number for students to complete the program in a timely manner:

- Provide the department's strategy for course offerings.
- Explain how often required courses are offered.
- Explain how often elective courses are offered.
- Explain how required courses outside the department are managed to be offered in sufficient number and frequency.

- MS Physics Program is divided in six semesters.

- Courses are offered during Semester I and II based on advance research and development.
- Availability of expert faculty members.
- Students have liberty to choose any Courses from scheme of studies.
- Courses outside the department are managed by consulting relevant department's coordinator per student choice.

Standard 4.2: Courses in the major area of study must be structured to ensure effective interaction between students, faculty and teaching assistants:

- Describe how you achieve effective student/faculty interaction in courses taught by more than one person such as two faculty members, a faculty member and a teaching assistant or a lecturer.

  - Effective student/faculty interaction in courses is achieved through presentations, quiz and seminars.

Standard 4.3: Guidance on how to complete the program must be available to all students and access to academic advising must be available to make course decisions and career choices:

- Describe how students are informed about program requirements.
- Describe the advising system and indicate how its effectiveness is measured.
- Describe the student counseling system and how students get professional counseling when needed.
- Indicate if students have access to professional counseling; when necessary.
- Describe opportunities available for students to interact with practitioners and to have membership in technical and professional societies.

- Students of MS get professional counseling at department and have meeting with carrier counseling department of the institution. Also by electronic media & prospectus. Also students are encouraged to participate in national & International seminars/conferences/workshops and to be active members in different scientific societies.

CRITERION 5: PROCESS CONTROL

Standard 5.1: The process by which students are admitted to the program must be based on quantitative and qualitative criteria and clearly documented. This process must be periodically evaluated to ensure that it is meeting its objectives:

- Describe the program admission criteria at the institutional level, faculty or department if applicable.
- Describe policy regarding program/credit transfer.
- Indicate how frequently the admission criteria are evaluated and if the evaluation results are used to improve the process.

- A minimum of 16 years of education is required for applying to the MS Programme in Physics. MS Physics Program is offered to those students who completed F.Sc. (Pre-Engg.) BS with physics background successfully. Admission criteria are on open merit and other quotas as prescribed by HEC. Applicants are expected to have obtained their Bachelor's degree (CGPA =2.5) from national or foreign institutions that are accredited or recognized by the Higher Education Commission (HEC) of Pakistan.

Standard 5.2: The process by which students are registered in the program and monitoring of students' progress to ensure timely completion of the program must be documented. This process must be periodically evaluated to ensure that it is meeting its objectives:

- Describe how students are registered in the program.
- Describe how student's academic progress is monitored and how their program of study is verified to adhere to the degree requirements.
- Indicate how frequently the process of registration and monitoring are evaluated and if the evaluation results are used to improve the process.
  - Students are registered in the program as per university and HEC rules.
  - Student's academic progress is monitored through examination system and their experimental work.
  - After completion of experimental work they write research papers. Publication of research papers in impact factor journal is their achievement.

Standard 5.3: The process of recruiting and retaining highly qualified faculty members must be in place and clearly documented. Also processes and procedures for faculty evaluation, promotion must be consistent with institution mission statement. These processes must be periodically evaluated to ensure that it is meeting its objectives:

- Describe the process used to ensure that highly qualified faculty is recruited to the program.
- Indicate methods used to retain excellent faculty members.
- Indicate how evaluation and promotion processes are in line with institution mission statement.
- Indicate how frequently this process in evaluated and if the evaluation results are used to improve the process.
  - The process is as per HEC criteria.

Standard 5.4: The process and procedures used to ensure that teaching and delivery of course material to the students emphasizes active learning and that course learning outcomes are met. The process must be periodically evaluated to ensure that it is meeting its objectives:

- Describe the process and procedures used to ensure that teaching and delivery of course material is effective and focus on students learning.
- Indicate how frequently this process is evaluated and if the evaluation results are used to improve the process.

- Lectures are delivered according to prescribed credit hours of each course. Course material is also delivered through multimedia and e-learning.
- The coordinator for each academic year for MS program conducts the meeting per month with her relevant faculty members to ensure the standards.

Standard 5.5: The process that ensures that graduates have completed the requirements of the program must be based on standards, effective and clearly documented procedures. This process must be periodically evaluated to ensure that it is meeting its objectives.

- Describe the procedures used to ensure that graduated meet the program requirements.
- Describe when this procedure is evaluated and whether the results of this evaluation are used to improve the process
- ➢ The completion of the program is documented through tests, assignments, quizzes, seminars and examinations, following the academic calendar.

CRITERION 6: FACULTY

Standard 6.1: There must be enough full time faculty who are committed to the program to provide adequate coverage of the program areas/courses with continuity and stability. The interests and qualifications of all faculty members must be sufficient to teach all courses, plan, modify and update courses and curricula. All faculty members must have a level of competence that would normally be obtained through graduate work in the discipline. The majority of the faculty must hold a Ph.D. in the discipline:

- Complete the following table indicating program areas and number of faculty in each area.
- Each faculty member should complete a resume.
- Information recorded in Table 4.6 and faculty member's resumes will be sufficient to validate standard 6-1.

Program Area of Specialization	Courses in the Area and Average Number of Sections per Year	Number of faculty Members in Each Area	Number of Faculty with Ph. D Degree
Area 1. Material Science	**02**	**04**	**04**
Area 2. Ceramics	**02**	**04**	**04**
Area 3. Semi-conductor Physics	**02**	**04**	**04**
Area 4. Nano-technology	**02**	**04**	**04**
Total			

Table 4.6: Faculty Distribution by Program Areas

Standard 6.2: All faculty members must remain current in the discipline and sufficient time must be provided for scholarly activities and professional development. Also, effective programs for faculty development must be in place:

- Describe the criteria for faculty to be deemed current in the discipline and based on these criteria and information in the faculty member's resumes, what percentage of them is current. The criteria should be developed by the department.
- Describe the means for ensuring that full time faculty members have sufficient time for scholarly and professional development.
- Describe existing faculty development programs at the departmental and university level. Demonstrate their effectiveness in achieving faculty development.
- Indicate how frequently faculty programs are evaluated and if the evaluation results are used for improvement.

- All faculty members are current in the discipline according to criteria prescribed by HEC.
- Faculty members are updated by means of workshops, seminars and conferences held within the campus as well as in other universities.
- Existing faculty development programs include national/ international seminars organized by department and other universities.

Standard 6.3: All faculty members should be motivated and have job satisfaction to excel in their profession:

- Describe programs and processes in place for faculty motivation.
- Obtain faculty input using Faculty Surveyon programs for faculty motivation and job satisfaction.
- Indicate how effective these programs are.

  - Faculty is self-motivated as well as by the institution through incentives such as awards and research incentives.

CRITERION 7: INSTITUTIONAL FACILITIES

Standard 7.1: The institution must have the infrastructure to support new trends in learning such as e-learning

- Describe infrastructure and facilities that support new trends in learning.
- Indicate how adequate the facilities are.

- Students avail other department's facilities as well as their laptops for e-learning.

Standard 7.2: The library must possess an up-to-date technical collection relevant to the program and must be adequately staffed with professional personnel:

- Describe the adequacy of the library's technical collection.
- Describe the support rendered by the library.
- Students for MS program take advantage of main library and HEC online library. The services are satisfactory.

Standard 7.3: Class-rooms must be adequately equipped and offices must be adequate to enable faculty to carry out their responsibilities:

- Describe the adequacy of the classrooms.
- Describe the adequacy of faculty offices

1. Yes, desperately deficiency of class rooms, no proper cross ventilations in class rooms.
2. Should arrange the alternate solution of light breakdown for labs & equipment.

3. Lack of electronic media for routine class presentations.
4. No proper faculty offices are available. All Ph. D faculty members share one research room.
5. A lot of improvements needed.

CRITERION8: INSTITUTIONAL SUPPORT

Standard 8.1: There must be sufficient support and financial resources to attract and retain high quality faculty and provide the means for them to maintain competence as teachers and scholars:

- Describe how your program meets this standard. If it does not explain the main causes and plans to rectify the situation.
- Describe the level of adequacy of secretarial support, technical staff and office equipment.

➢ Satisfactory

Standard 8.2: There must be an adequate number of high quality graduate students, research assistants and Ph.D. students:

- Provide the number of graduate students, research assistants and Ph. D students for the last three years.
- Provide the faculty: graduate student ratio for the last three years.

➢ No research assistants available.
➢ See table 4, table 5 in the standard 1.4.

Standard 8.3: Financial resources must be provided to acquire and maintain Library holdings, laboratories and computing facilities:

- Describe the resources available for the library.
- Describe the resources available for laboratories.
- Describe the resources available for computing facilities.

➢ Resources provided by university according to allocated budget.