PIR MEHR ALI SHAH

ARID AGRICULTURE UNIVERSITY

RAWALPINDI

SELF ASSESSMENT REPORT 1st CYCLE (2022-24)

Department of Mathematics

M.Phil Mathematics

Program Team:

Dr. Muhammad Jamal (Convener)

Dr. Ehtsham Azhar (Member)

Dr. Sadia Medhit (Member)

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INTRODUCTION

The Department of Mathematics is one of the active department in Pir Mehr Ali Shah Arid Agriculture University Rawalpindi. The department had introduced the initiation of M. Phil Mathematics degree program in Fall-2022. In order to enhance the productivity and progress of the Department, the establishment of Mathematics department was approved in 45th meeting of Academic Council in 2013 and has also approved its name as Department of Mathematics instead of the Department of Mathematics and Statistics. Moreover, M.Phil. degree program in Mathematics was initiated in 2022, after the approval of Scheme of studies by Academic Council of the University. The first batch of M.Phil.-Mathematics consisted of 40 students were enrolled in Fall-2022 and the said batch passed out in Fall-2024.

The philosophy and objectives of this program were centered on the aims to provide an advanced understanding of the core principles and topics of mathematics and their experimental basis, and to enable students to acquire a specialized knowledge and understanding of selected aspects by means of a stem/branch lecture series and a research project. It provides students with an advanced integrated knowledge, strength, self-reliance, economic emancipation, and the broadening of opportunities through well-coordinated education of citizens. The core research areas of M.Phil. Mathematics are based on Analysis, Cryptography, Fluid Mechanics, Biological Mathematics, Solid Mechanics, Differential Equations, Operations research etc.

This Self-Assessment Report (SAR) is prepared by following the Higher Education Commissions (HEC) framework based on eight criteria. The first criterion outlines the program mission and objectives. Criterion 2 is relevant with the curriculum development. The computer labs and other relevant information are prescribed in criterion 3. The fourth criterion is pertinent to the information about students' support and advising. The remaining four criteria provide information about process control, faculty characteristics and institutional support.

Criteria 1

PROGRAM MISSION OBJECTIVES AND OUTCOMES

Standard 1-1:

The program must have documented measurable objectives that support Faculty and institution mission statements.

Mission Statement

The mission of the program is to give quality education, provide conducive environment for learning and to give an extensive support to the students to learn the fundamental concepts that constitute classical and contemporary mathematics.

Objectives

Consequently, the program objectives are generally aimed at:

1. Applying knowledge in modern industry or teaching, or secure acceptance in high-quality graduate programs in mathematics and other fields such as the field of quantitative, mathematical computing, statistics.
2. Providing the opportunity for professional cadre in the field of Mathematics.
3. Supporting the national development program within the public and higher education institutes and encouraging scientific research and publications in the accredited scientific publications.
4. Enhancing performance, standards in the field of Mathematics in order to be a leading departmentof academic arena.

Main Elements of the Strategic Plan to Achieve Program Mission and Objectives:

1. The program is designed to prepare students for successful careers, either in mathematics or a related discipline. The degree is intended to familiarize students with a wide range of areas withinthe field of mathematics.
2. Participation and presentation in national or international conferences are necessary for

the

enhancement of student's professional training and new developments.

3. As per the modern and global trends, inclusions of new courses are required.
4. Highly qualified and talented faculty is required.

PROGRAMME OBJECTIVES ASSESSMENT

Table 1: Program Objective Assessment

Sr. #	Objectives	How Measured	When Measured	Improvement Identified	Improvement Made
1.	The improvement and broadening of the Program of Mathematics on current lines Inclusion of practical based courses.	By evaluating student responses and feed back	At the end of each semester.	Practical based courses should be offered along with the student's opportunities in the field. Teachers should have interaction to local universities and foreign institutes	Practical based courses are included and also coordinated with other universities.
2	To give the healthy academic environment and to train them with impart of new knowledge.	Through teacher students' discussions.	Continuous activity.	Seminars courses should beoffered in the third and fourth semester.	The teachers have given research based topics to students and their communication skills have been improved through presentation.

3	Inclusion of new courses as per modern and latest lines	The curriculum is revised as per HEC policy and keeping in view the curriculum of others universities.	At the end of each year	Courses should be improved and modified	Scheme of study is designed according to HEC and according to curriculum of other universities.
4.	Highly qualified faculty is required	Through coordination with department	At the end of year	Highly qualified faculty is required	One Faculty member was Appointed in the year 2023.

Standard 1-2: The program must have documented outcomes for M. Phil students. It must be documented that the outcomes support the program objectives and that graduating students are capable of performing these outcomes.

PROGRAMME LEARNING OUTCOMES

All the students in this program possess following capabilities:

1. The student possesses the capability of better subject understanding, its scope and anadvanced knowledge in different areas of Mathematics.
2. The students are capable to use of new analytical, classical and computational techniques indifferent fields.
3. Self-discipline and communication skills of the students have been improved.
4. Expertise of basic and applied knowledge is enhanced.
5. The relationship of program objectives and outcomes are represented in the following table.

Table: 2 Relationship of Program Objectives and Outcomes

Program Objectives	Outcomes			
	1	2	3	4
1	++++	++++	++++	+++
2	++++	++++	+	++
3	+++	++	++	++++
4	+++	++	++	++++

The cells with the sign ++++ shows the achievement of that particular program objective with

Highly relevant highly satisfactory level.

+++ shows **very relevant and satisfactory**

++ shows **relevant and satisfactory**

+ shows **relevant**

Standard 1-3: The results of program's assessment and the extent to which they are used to improve the program must be documented.

Following actions have been taken on the basis of program assessment results.

Actions taken based on the Results of Program Assessment

- The main quality of the program is the accessibility of very qualified faculty with full expertise of their specialized subjects. Highly qualified faculty is required for enhancement of the Program. One PhD faculty member is

appointed in the year 2023.

- The curricula are being updated on the basis of more applied, modern and professionally sound courses.
- Different questionnaires, workshops and surveys play a vital part in the identification and evacuation of shortcomings identified in the instructing techniques. The department is trying to work on these aspects.
- The establishment of personal computer lab will play a vital role in the improvement of teaching methodologies and for the up gradation of curriculum. Fundamental steps are being taken in this regard. Highly qualified Lab Technician is required.

As the program is running from the year 2022 and highly positive response is achieved from the public. Therefore, it is necessary that the following weaknesses should be removed.

Weaknesses Detected:

- Highly qualified faculty with expertise in different subjects is required. There should be different training programs and seminars are required for faculty members and students.
- The program needs the separate representation (as per HEC requirement) for the initiationof PhD program.
- The establishment of Personal computer lab needs quick consideration and it should be equipped with latest hardware's and software's. The most recent and updated mathematicalsoftware's are required.
- The separate allocation of budget is required for the smooth running of the program. Research Grant and proper funding are required for the development of the program.
- Latest book, reviews and journals from the authentic scientists are hardly available. The quantitative assessment of the program has been shown in the following table.

TABLE 3: QUANTITATIVE ASSESSMENT OF THE DEPARTMENT

Sr.#	Particular	No.	Remarks

1	M.Phil. Degree Awarded	30	As the first batch enrolled in the fall semester 2022. The students will pass out in fall semester 2024.

Standard 1-4: The Program must assess its overall performance periodically using quantifiable measure

- Performance of the faculty members with respect to their research publication indicates that faculty members have produced the following number of research papers during the year 2022-2024.

Table 4: Quantitative Assessment of the Program (2022-2024)

Sr. #	Faculty	No. of Papers
1.	Dr. Muhammad Jamal	20
2.	Dr. Saima Mustafa	10
3.	Dr. Ehtsham Azhar	23
4	Dr. Sadia Medhit	02

Table 5: Degree Requirements

Degree	Pre-requites
M. Phil	• Sixteen years of schooling or 4-year education after HSSC/F.A./F.Sc./Grade 12, equivalent will be required for admission in the master's degree. • Required aggregated CGPA of not less than 2.50 under semester system or 45% of the marks secured under annual examination system or its equivalent in the field of study. • Entry test (admission test) will be conducted by the university itself through committee approved for the purpose or by engaging renowned testing service provider and it is mandatory to qualify with 50% marks. • Merit will be determined on the basis of marks obtained in the last degree/certificate.

Program Assessment

Results

Fall 2022-24

According to the Performa 1 and Performa 10, the following teachers have been evaluated by the studentsfor the semester Fall 2022-24 as follows.

1) Dr. Muhammad Jamal
2) Dr. Saima Mustafa
3) Dr. Ehtsham Azhar
4) Dr. Sadia Medhit

Performa 10 titled **Teacher Course Evaluation.**
Performa 1 titled **Student Course Evaluation.**

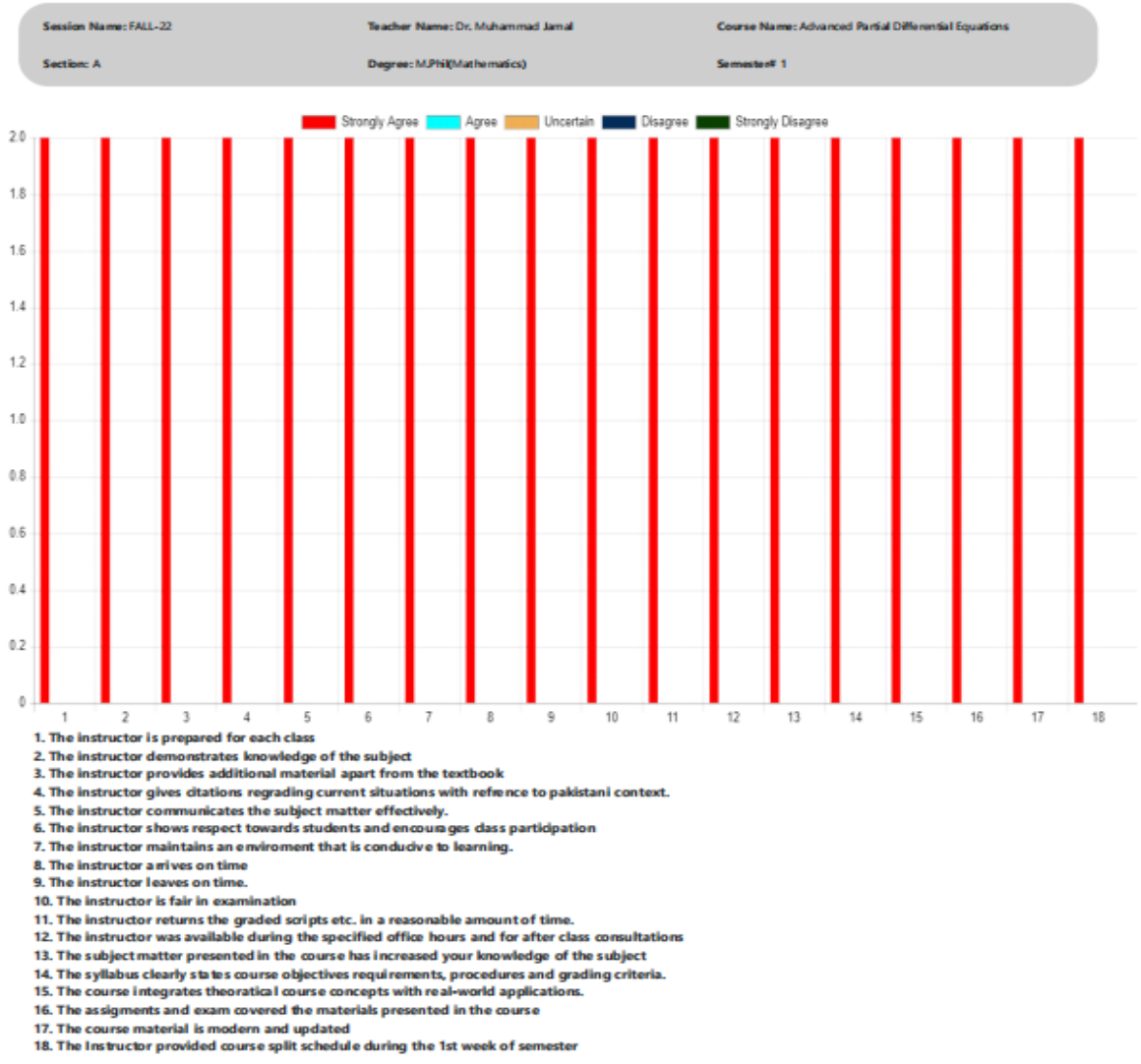
Individual statements of the Performa's are also summarized in the following Figures.

Teacher Course Evaluation

FALL-22

Dr. Muhammad Jamal (MATH-756)

The graph for "The instructor is prepared for each class", shows that 100% are strongly agreed. The graph for "The instructor demonstrates knowledge of the subject", shows that 100% are strongly agreed. The graph for "The instructor maintains an environment that is conducive to learning", shows that 100% are strongly agreed. The graph for "The instructor arrives at time", shows that 100% are strongly agreed.



General Comments of the Students about the Teacher Strengths:

- The instructor is fair in examination
- The instructor is prepared for each class
- The instructor is punctual in a class
- Well presented
- The instructor maintains an environment that is conducive to learning

Weakness:

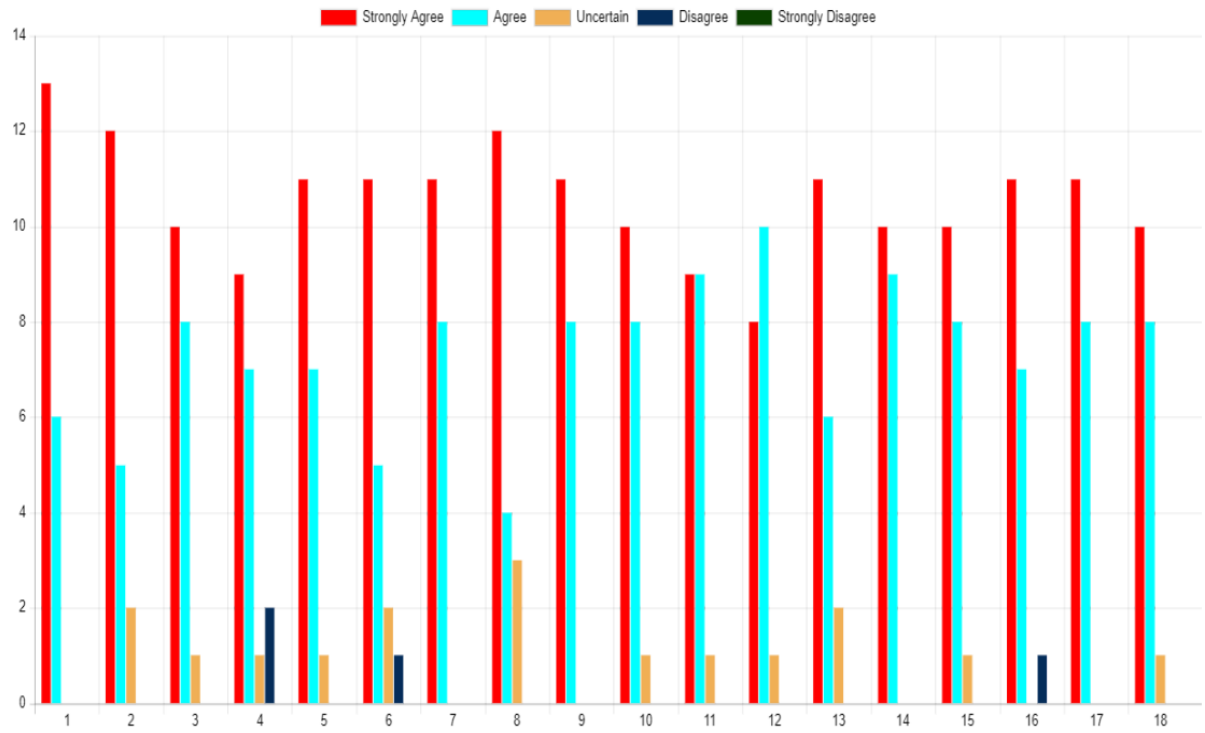
- No significance weakness was found

Dr. Ehtsham Azhar (MATH-763)

The graph for “The instructor is prepared for each class”, shows that 68% are strongly agreed and 32% are agreed. The graph for “The course material is modern and updated”, shows that 58% students strongly agreed, 42% students agreed. The graph for “The instructor provides additional material apart from the textbook”, shows that 53% students are strongly agreed, 42% students are agreed, and 5% students are uncertain.

Session Name: FALL-22 **Teacher Name:** Ehtasham Azhar **Course Name:** Advanced Fluid Mechanics

Section: A **Degree:** M.Phil(Mathematics) **Semester#** 1



1. The instructor is prepared for each class
2. The instructor demonstrates knowledge of the subject
3. The instructor provides additional material apart from the textbook
4. The instructor gives citations regrading current situations with refrence to pakistani context.
5. The instructor communicates the subject matter effectively.
6. The instructor shows respect towards students and encourages class participation
7. The instructor maintains an enviroment that is conducive to learning.
8. The instructor arrives on time
9. The instructor leaves on time.
10. The instructor is fair in examination
11. The instructor returns the graded scripts etc. in a reasonable amount of time.
12. The instructor was available during the specified office hours and for after class consultations
13. The subject matter presented in the course has increased your knowledge of the subject
14. The syllabus clearly states course objectives requirements, procedures and grading criteria.
15. The course integrates theoratical course concepts with real-world applications.
16. The assigments and exam covered the materials presented in the course
17. The course material is modern and updated
18. The Instructor provided course split schedule during the 1st week of semester

General Comments of the Students about the Teacher Strengths:

- The instructor is fair in examination
- The instructor is prepared for each class
- The instructor is punctual in a class
- Well presented
- The instructor maintains an environment that is conducive to learning

Weakness:

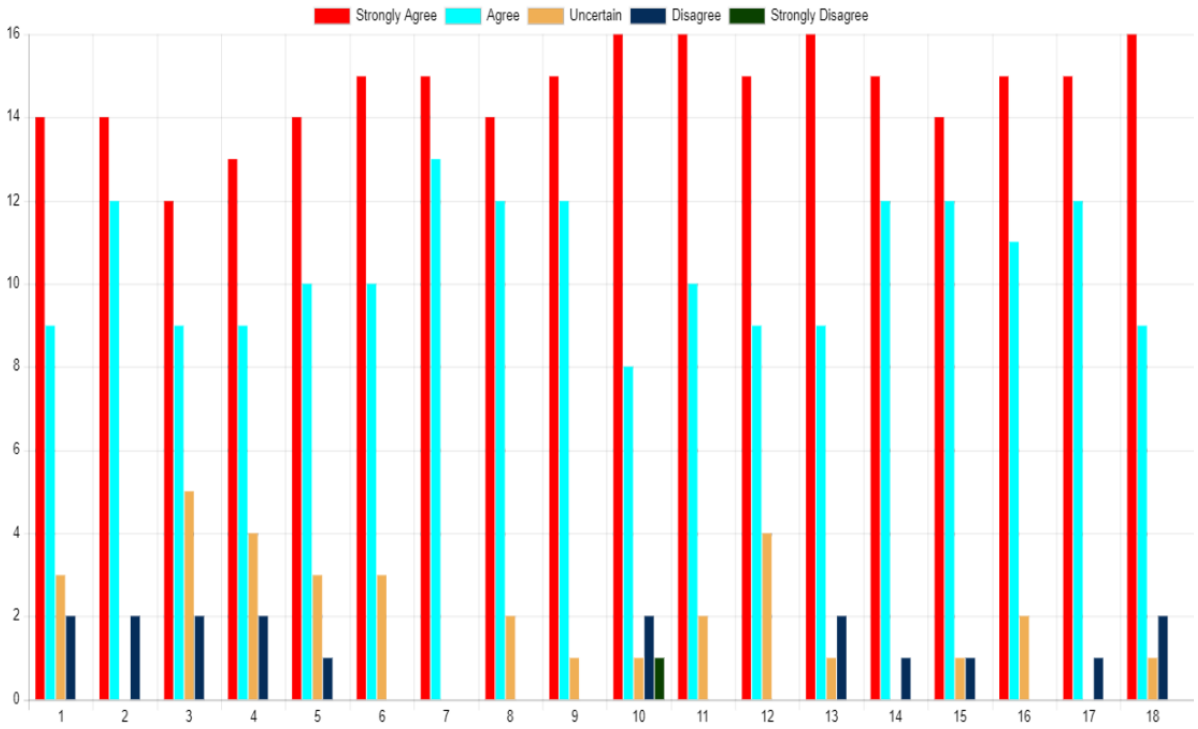
- No significance weakness was found

Dr. Sadia Medhit (MATH-778)

The graph for “The instructor is prepared for each class”, shows that 50% are strongly agreed and 32% are agreed, 11% are uncertain and 7% are disagree. The graph for “The course material is modern and updated”, shows that 54% students strongly agreed, 43% students agreed and 3% are disagree. The graph for “The instructor provides additional material apart from the textbook”, shows that 43% students are strongly agreed, 32% students are agreed, 18% students are uncertain and 7% are disagree.

Session Name: FALL-22 **Teacher Name:** Sadia Midhat **Course Name:** Cryptography

Section: A **Degree:** M.Phil(Mathematics) **Semester#** 1



1. The instructor is prepared for each class
2. The instructor demonstrates knowledge of the subject
3. The instructor provides additional material apart from the textbook
4. The instructor gives citations regrading current situations with refrence to pakistani context.
5. The instructor communicates the subject matter effectively.
6. The instructor shows respect towards students and encourages class participation
7. The instructor maintains an enviroment that is conducive to learning.
8. The instructor arrives on time
9. The instructor leaves on time.
10. The instructor is fair in examination
11. The instructor returns the graded scripts etc. in a reasonable amount of time.
12. The instructor was available during the specified office hours and for after class consultations
13. The subject matter presented in the course has increased your knowledge of the subject
14. The syllabus clearly states course objectives requirements, procedures and grading criteria.
15. The course integrates theoratical course concepts with real-world applications.
16. The assigments and exam covered the materials presented in the course
17. The course material is modern and updated
18. The Instructor provided course split schedule during the 1st week of semester

General Comments of the Students about the Teacher Strengths:

- The instructor is prepared for each class
- The instructor is punctual in a class
- The instructor shows respect towards students and encourages class participation
- The instructor returns the graded scripts etc. in a reasonable amount of time
- The instructor maintains an environment that is conducive to learning

Weakness:

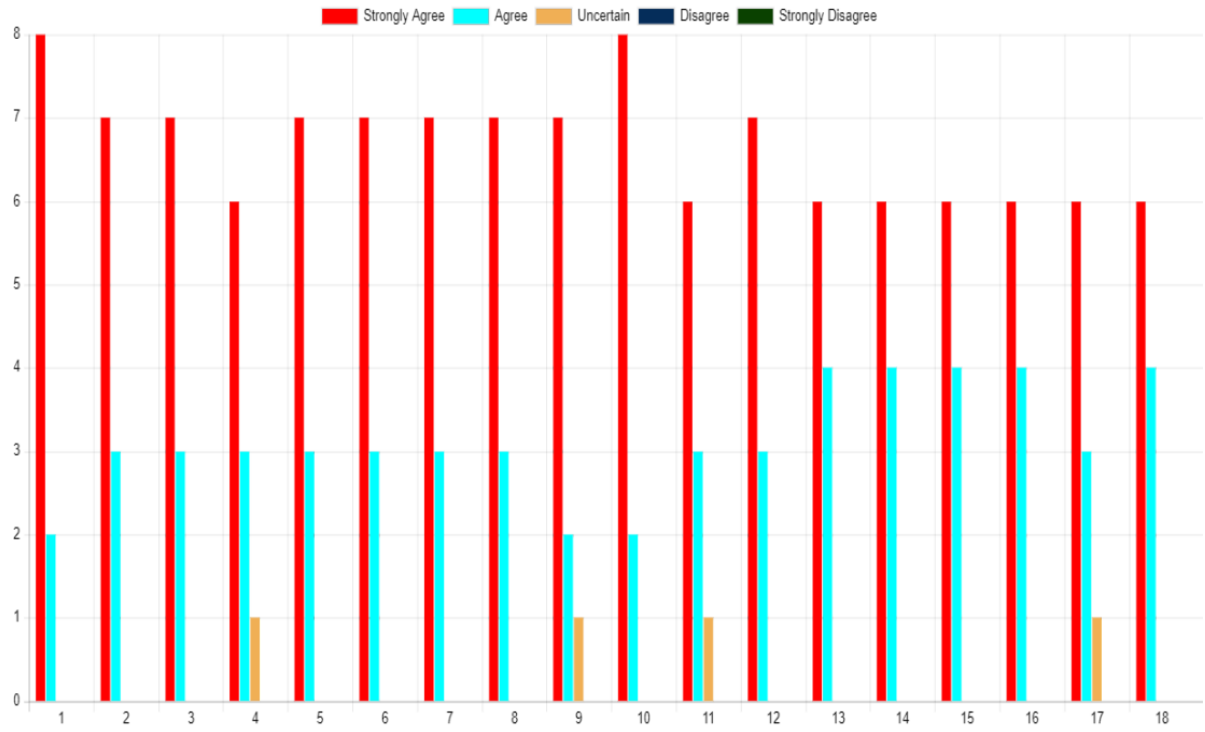
No significance weakness was found

Prof. Dr. M. Hanif (STAT-761)

The graph for “The instructor is prepared for each class”, shows that 80% are strongly agreed and 20% are agreed. The graph for “The instructor is fair in examination”, shows that 80% are strongly agreed and 20% are agreed. The graph for “The instructor returns the graded scripts etc. in a reasonable amount of time”, shows that 60% are strongly agreed, 30% are agreed and 10% are uncertain.

Session Name: FALL-22 | **Teacher Name:** Prof. Dr. Muhammad Hanif | **Course Name:** Probability And Stochastic Process

Section: A | **Degree:** M.Phil(Mathematics) | **Semester#** 1



1. The instructor is prepared for each class
2. The instructor demonstrates knowledge of the subject
3. The instructor provides additional material apart from the textbook
4. The instructor gives citations regrading current situations with refrence to pakistani context.
5. The instructor communicates the subject matter effectively.
6. The instructor shows respect towards students and encourages class participation
7. The instructor maintains an enviroment that is conducive to learning.
8. The instructor arrives on time
9. The instructor leaves on time.
10. The instructor is fair in examination
11. The instructor returns the graded scripts etc. in a reasonable amount of time.
12. The instructor was available during the specified office hours and for after class consultations
13. The subject matter presented in the course has increased your knowledge of the subject
14. The syllabus clearly states course objectives requirements, procedures and grading criteria.
15. The course integrates theoratical course concepts with real-world applications.
16. The assigments and exam covered the materials presented in the course
17. The course material is modern and updated
18. The Instructor provided course split schedule during the 1st week of semester

General Comments of the Students about the Teacher Strengths:

- The instructor is prepared for each class
- The instructor is punctual in a class
- The instructor shows respect towards students and encourages class participation
- The instructor returns the graded scripts etc. in a reasonable amount of time
- The instructor maintains an environment that is conducive to learning

Weakness:

- No significance weakness was found

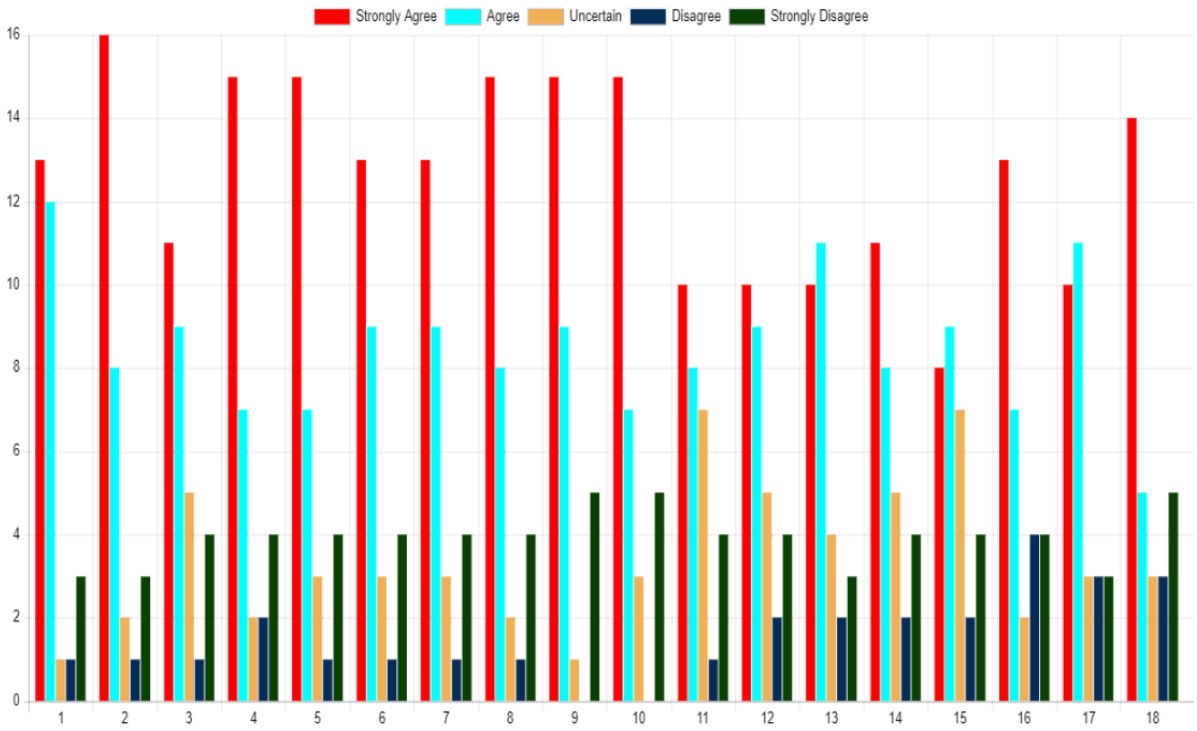
SPRING-23

Dr. Ehtsham Azhar (MATH-757)

The graph for “The instructor is prepared for each class”, shows that 43% are strongly agreed, 41% are agreed, 3% are uncertain,3% are disagreed and 10% are strongly disagreed. The graph for “The instructor demonstrates knowledge of the subject”, shows that 53% are strongly agreed, 27% are agreed,7% are uncertain,3% are disagreed and 10% are strongly disagreed. The graph for “The instructor provides additional material apart from the textbook”, shows that 37% are strongly agreed, 30% are agreed,17% are uncertain,3% are disagreed and 13% are strongly disagreed.

Session Name: SPRING-23 | **Teacher Name:** Ehtasham Azhar | **Course Name:** Numerical Solution Of Ordinary Differential Equations

Section: A | **Degree:** M.Phil(Mathematics) | **Semester#** 2



1. The instructor is prepared for each class
2. The instructor demonstrates knowledge of the subject
3. The instructor provides additional material apart from the textbook
4. The instructor gives citations regrading current situations with refrence to pakistani context.
5. The instructor communicates the subject matter effectively.
6. The instructor shows respect towards students and encourages class participation
7. The instructor maintains an enviroment that is conducive to learning.
8. The instructor arrives on time
9. The instructor leaves on time.
10. The instructor is fair in examination
11. The instructor returns the graded scripts etc. in a reasonable amount of time.
12. The instructor was available during the specified office hours and for after class consultations
13. The subject matter presented in the course has increased your knowledge of the subject
14. The syllabus clearly states course objectives requirements, procedures and grading criteria.
15. The course integrates theoratical course concepts with real-world applications.
16. The assigments and exam covered the materials presented in the course
17. The course material is modern and updated
18. The Instructor provided course split schedule during the 1st week of semester

General Comments of the Students about the Teacher Strengths:

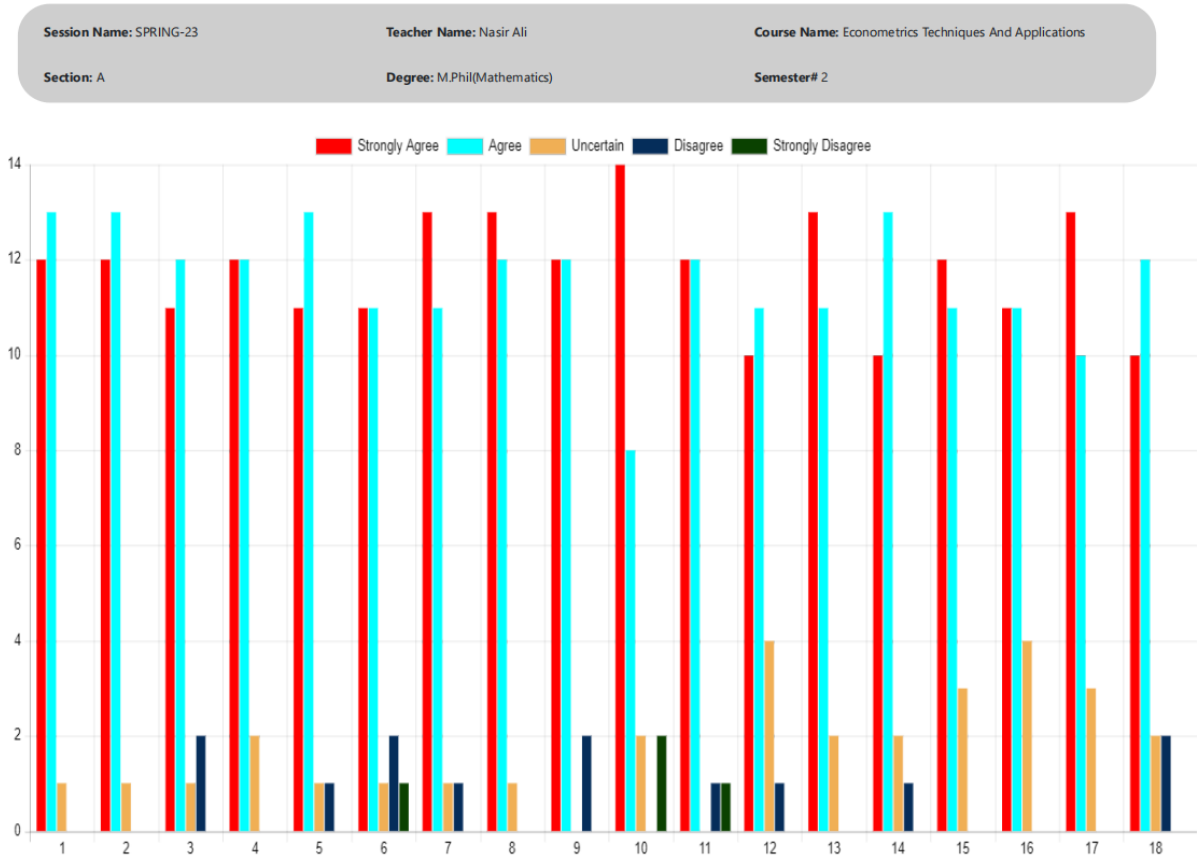
- The instructor communicates the subject matter effectively.
- The instructor is punctual
- The instructor is prepared for each class
- The instructor shows respect towards students and encourages class participation

Weakness:

- No significance weakness was found

Dr. Nasir Ali (ECON-754)

The graph for "The instructor shows respect towards students and encourages class participation", shows that 42% are strongly agreed, 42% are agreed, 4% are uncertain, 8% are disagreed and 4% are strongly disagreed. The graph for "The instructor maintains an environment that is conducive to learning", shows that 50% are strongly agreed, 42% are agreed, 4% are uncertain and 4% are disagreed. The graph for "The instructor arrives on time", shows that 50% are strongly agreed, 46% are agreed and 4% are uncertain.



General Comments of the Students about the Teacher Strengths:

- The instructor is prepared for each class
- The instructor shows respect towards students and encourages class participation
- The instructor arrives on time

Weakness:

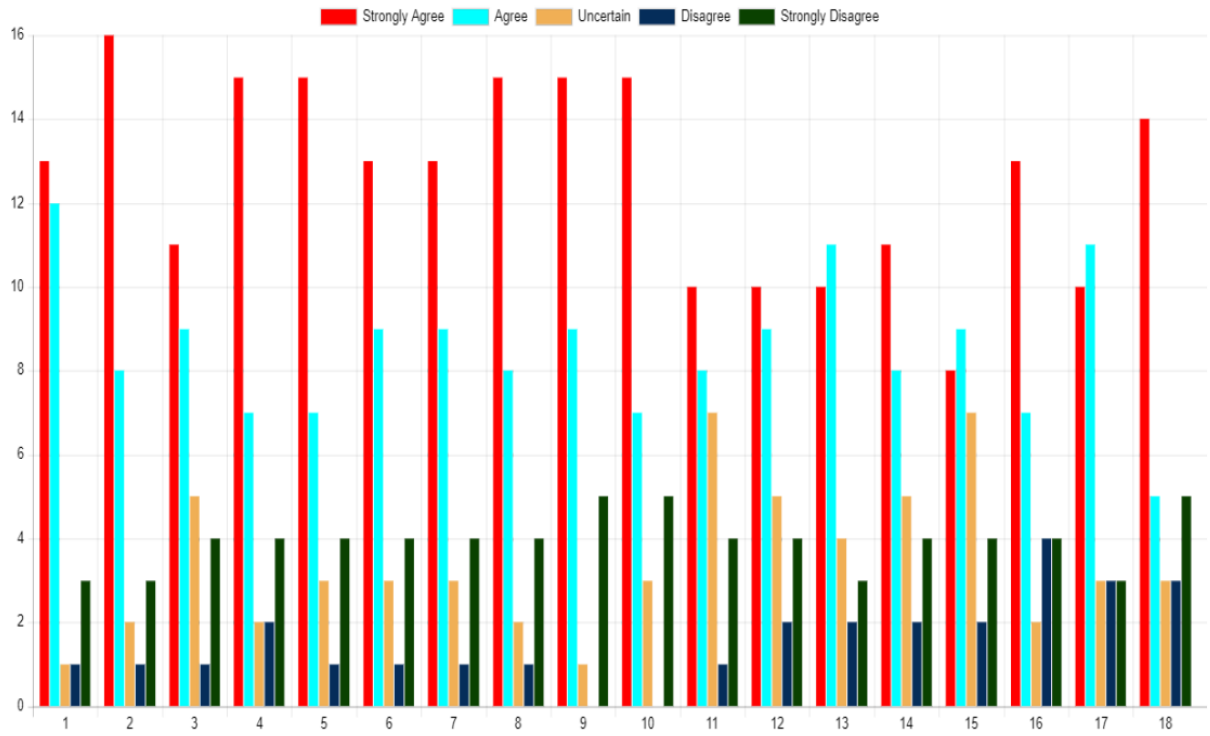
- No significance weakness was found

Dr. Ehtsham Azhar (MATH-719)

The graph for “The instructor is prepared for each class”, shows that 43% are strongly agreed, 41% are agreed,3% are uncertain,3% are disagreed and 10% are strongly disagreed. The graph for “The instructor demonstrates knowledge of the subject”, shows that 53% are strongly agreed, 27% are agreed,7% are uncertain,3% are disagreed and 10% are strongly disagreed. The graph for “The instructor provides additional material apart from the textbook”, shows that 37% are strongly agreed, 30% are agreed,17% are uncertain,3% are disagreed and 13% are strongly disagreed.

Session Name: SPRING-23 **Teacher Name:** Ehtasham Azhar **Course Name:** Special Problem

Section: A **Degree:** M.Phil(Mathematics) **Semester#** 2



1. The instructor is prepared for each class
2. The instructor demonstrates knowledge of the subject
3. The instructor provides additional material apart from the textbook
4. The instructor gives citations regrading current situations with refrence to pakistani context.
5. The instructor communicates the subject matter effectively.
6. The instructor shows respect towards students and encourages class participation
7. The instructor maintains an enviroment that is conducive to learning.
8. The instructor arrives on time
9. The instructor leaves on time.
10. The instructor is fair in examination
11. The instructor returns the graded scripts etc. in a reasonable amount of time.
12. The instructor was available during the specified office hours and for after class consultations
13. The subject matter presented in the course has increased your knowledge of the subject
14. The syllabus clearly states course objectives requirements, procedures and grading criteria.
15. The course integrates theoratical course concepts with real-world applications.
16. The assigments and exam covered the materials presented in the course
17. The course material is modern and updated
18. The Instructor provided course split schedule during the 1st week of semester

General Comments of the Students about the Teacher Strengths:

- The instructor is fair in examination.
- The instructor demonstrates knowledge of the subject
- The instructor is prepared for each class
- The instructor was available during the specified office hours and for after class consultations

Weakness:

- No significance weakness was found

FALL-23

Dr. Sadia Medhit (MATH-778)

The graph for “The instructor is prepared for each class”, shows that 100% are strongly agreed. The graph for “The instructor demonstrates knowledge of the subject”, shows that 50% are strongly agreed and 50% are agreed. The graph for “The instructor maintains an environment that is conducive to learning”, shows that 100% are agreed.

General Comments of the Students about the Teacher Strengths:

- The instructor is prepared for each class

- The instructor is punctual in a class
- The instructor provides additional material apart from the textbook
- The instructor shows respect towards students and encourages class participation
- The instructor maintains an environment that is conducive to learning

Weakness:

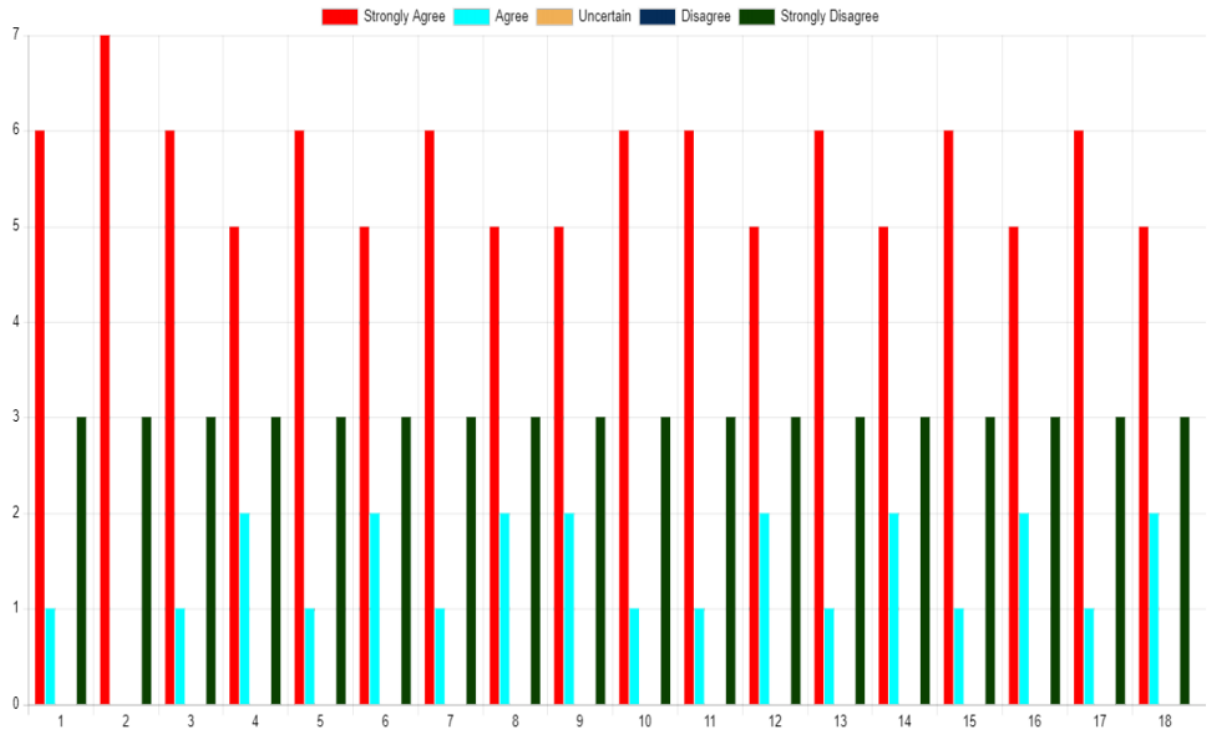
- No significance weakness was found

Dr. Ehtsham Azhar (MATH-763)

The graph for “The instructor is prepared for each class”, shows that 86% are strongly agreed and 14% are agreed. The graph for “The course material is modern and updated”, shows that 86% are strongly agreed and 14% are agreed. The graph for “The instructor maintains an environment that is conducive to learning”, shows that 86% are strongly agreed and 42% are agreed.

Session Name: FALL-23 **Teacher Name:** Ehtasham Azhar **Course Name:** Advanced Fluid Mechanics

Section: A **Degree:** M.Phil(Mathematics) **Semester#** 1



1. The instructor is prepared for each class
2. The instructor demonstrates knowledge of the subject
3. The instructor provides additional material apart from the textbook
4. The instructor gives citations regrading current situations with refrence to pakistani context.
5. The instructor communicates the subject matter effectively.
6. The instructor shows respect towards students and encourages class participation
7. The instructor maintains an enviroment that is conducive to learning.
8. The instructor arrives on time
9. The instructor leaves on time.
10. The instructor is fair in examination
11. The instructor returns the graded scripts etc. in a reasonable amount of time.
12. The instructor was available during the specified office hours and for after class consultations
13. The subject matter presented in the course has increased your knowledge of the subject
14. The syllabus clearly states course objectives requirements, procedures and grading criteria.
15. The course integrates theoratical course concepts with real-world applications.
16. The assigments and exam covered the materials presented in the course
17. The course material is modern and updated
18. The Instructor provided course split schedule during the 1st week of semester

General Comments of the Students about the Teacher Strengths:

- The instructor communicates the subject matter effectively.
- The instructor is fair in examination.
- The instructor is prepared for each class
- The instructor gives citations regarding current situations with reference to Pakistani context.

Weakness:

- No significance weakness was found

SPRING-24

Dr. Hashmat Ali Malik (MATH-754)

The graph for “The instructor is prepared for each class”, shows that 67% are strongly agreed and 33% are agreed. The graph for “The course material is modern and updated”, shows that 77% students strongly agreed, 8% are agreed,8% are uncertain and 8% are disagreed. The graph for “The instructor maintains an environment that is conducive to learning”, shows that 54% students are strongly agreed, 31% are agreed, 8% are uncertain and 7% are disagreed. The graph for “The instructor provides additional material apart from the textbook”, shows that 71% students are strongly agreed, 14% are agreed, 8% are uncertain and 7% are strongly disagree.

General Comments of the Students about the Teacher Strengths:

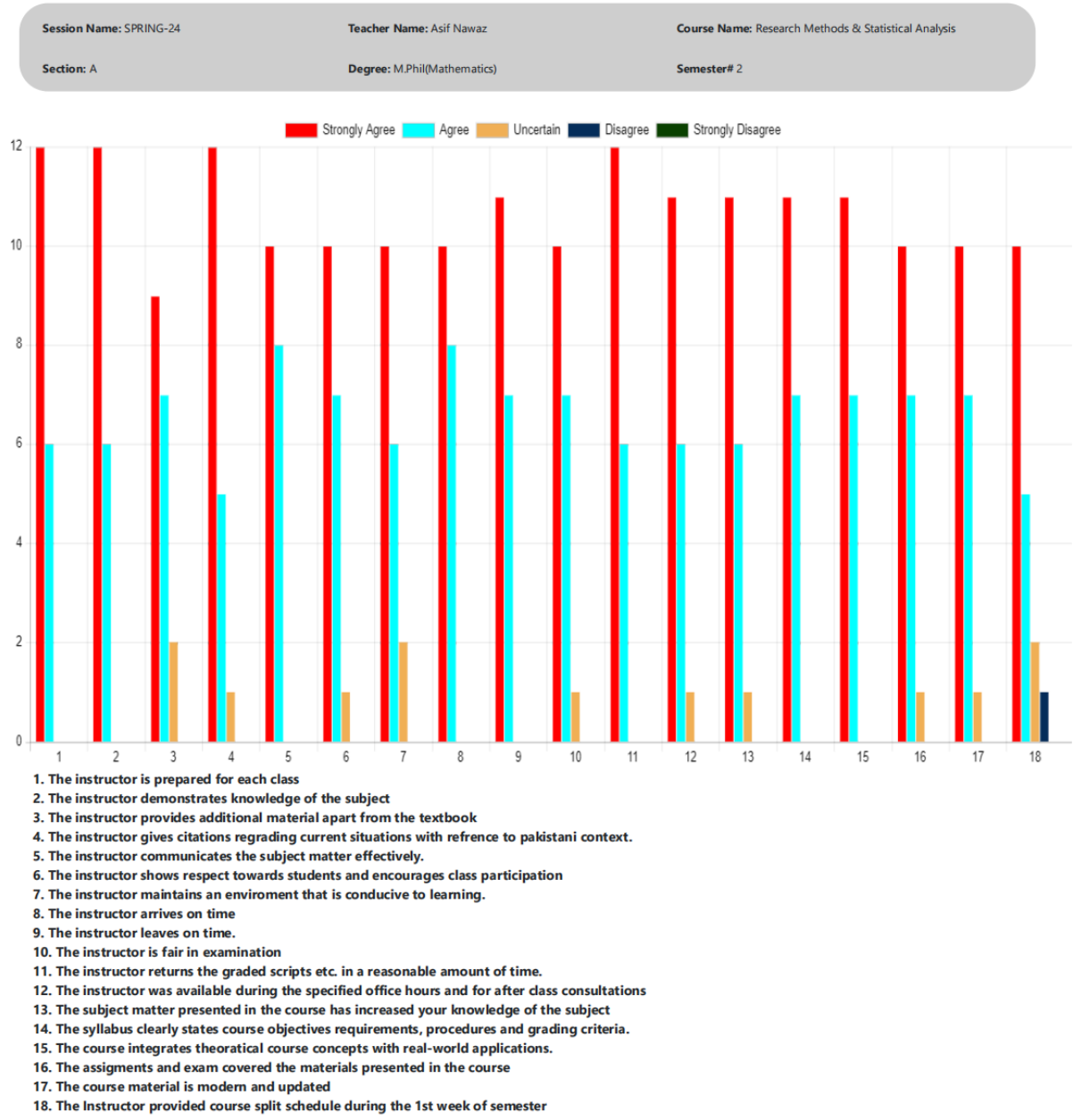
- The instructor communicates the subject matter effectively.
- The instructor is prepared for each class
- The instructor gives citations regarding current situations with reference to Pakistani context.

Weakness:

- No significance weakness was found

Dr. Asif Nawaz (CSC-763)

The graph for “The instructor is prepared for each class”, shows that 67% are strongly agreed and 33% are agreed. The graph for “The course material is modern and updated”, shows that 56% students strongly agreed, 39% students agreed and 5% students uncertain. The graph for “The instructor provides additional material apart from the textbook”, shows that 50% students are strongly agreed, and 39% students are agreed and 11% students are uncertain.



General Comments of the Students about the Teacher Strengths:

- The instructor communicates the subject matter effectively.

- The instructor is fair in examination.
- The instructor is prepared for each class
- The instructor gives citations regarding current situations with reference to Pakistani context.

Weakness:

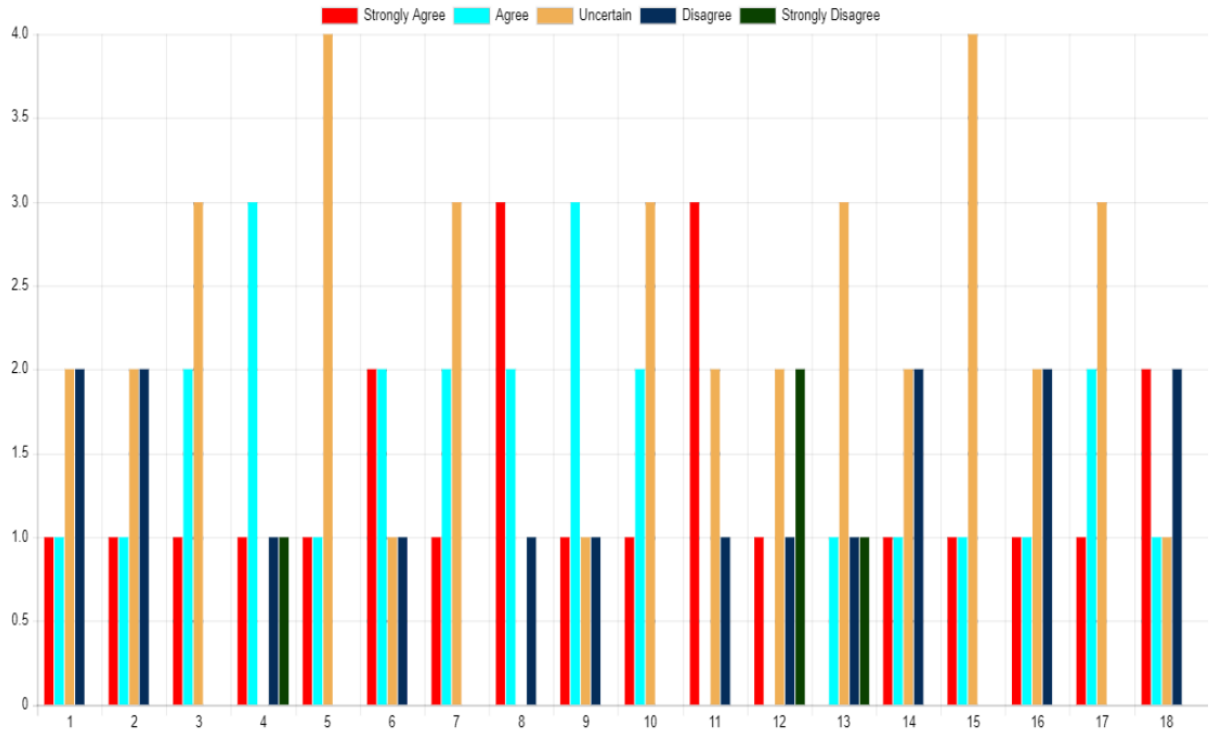
- No significance weakness was found

Dr. Faqeer Muhammad (ECON-754)

The graph for "The instructor is prepared for each class", shows that 17% are strongly agreed, 17% are agreed, 33% are uncertain and 33% are disagreed. The graph for "The instructor demonstrates knowledge of the subject", shows that 17% are strongly agreed, 17% are agreed and 33% are uncertain and strongly disagreed. The graph for "The instructor arrives on time", shows that 50% are strongly agreed, 33% are agreed and 17% are disagreed.

Session Name: SPRING-24 | **Teacher Name:** Faqir Muhammad | **Course Name:** Econometrics Techniques And Applications

Section: A | **Degree:** M.Phil(Mathematics) | **Semester#** 2



1. The instructor is prepared for each class
2. The instructor demonstrates knowledge of the subject
3. The instructor provides additional material apart from the textbook
4. The instructor gives citations regrading current situations with refrence to pakistani context.
5. The instructor communicates the subject matter effectively.
6. The instructor shows respect towards students and encourages class participation
7. The instructor maintains an enviroment that is conducive to learning.
8. The instructor arrives on time
9. The instructor leaves on time.
10. The instructor is fair in examination
11. The instructor returns the graded scripts etc. in a reasonable amount of time.
12. The instructor was available during the specified office hours and for after class consultations
13. The subject matter presented in the course has increased your knowledge of the subject
14. The syllabus clearly states course objectives requirements, procedures and grading criteria.
15. The course integrates theoratical course concepts with real-world applications.
16. The assigments and exam covered the materials presented in the course
17. The course material is modern and updated
18. The Instructor provided course split schedule during the 1st week of semester

General Comments of the Students about the Teacher Strengths:

- The instructor communicates the subject matter effectively.
- The instructor is fair in examination.
- The instructor is prepared for each class
- The instructor gives citations regarding current situations with reference to Pakistani context.

Weakness:

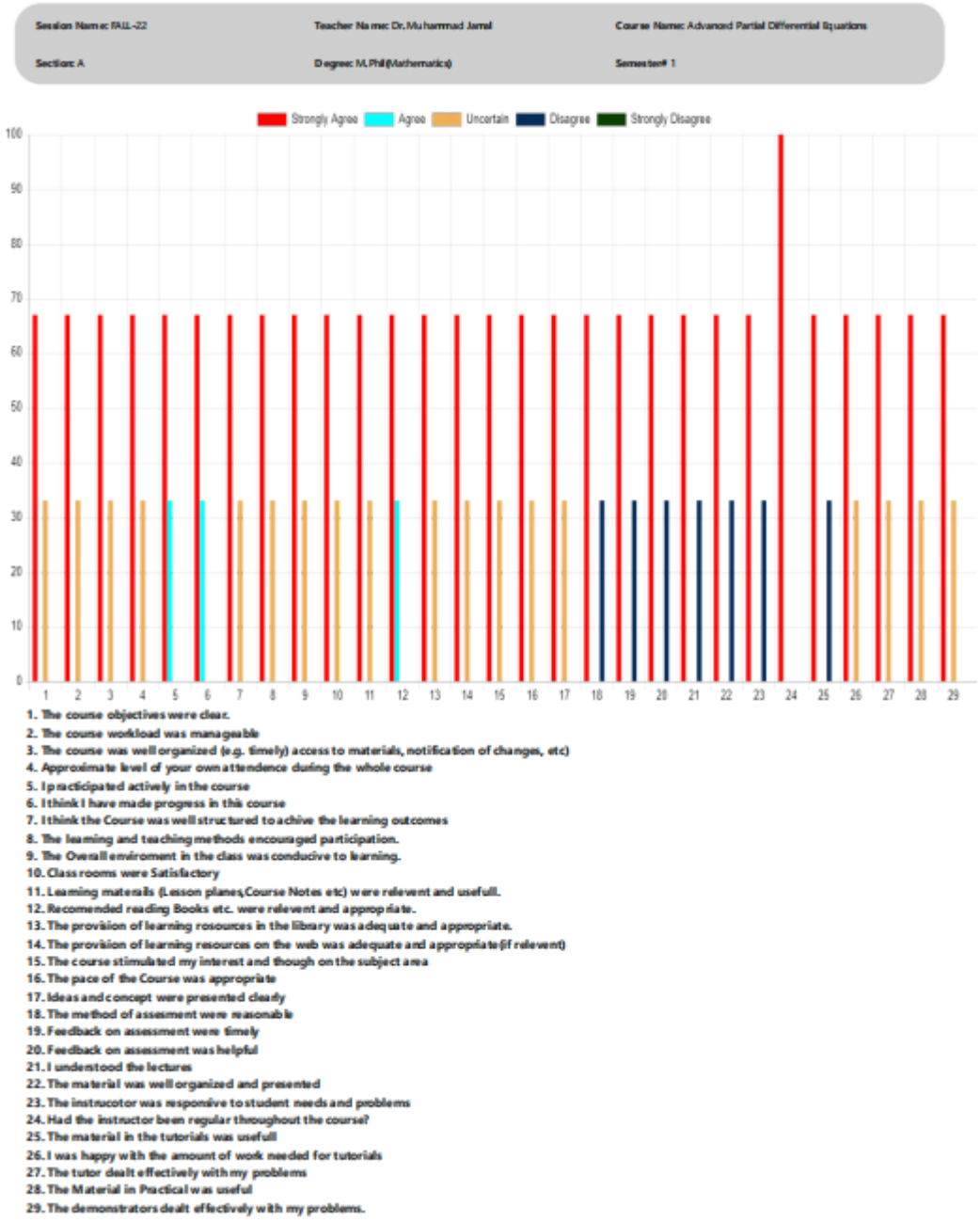
- The instructor should provide additional material apart from the textbook.

STUDENT COURSE EVALUATION

FALL-22

Dr. Muhammad Jamal (MATH-756)

The graph of "The Course Objectives were clear" indicates this, 66% are strongly agreed and 34% are uncertain. The graph of "The Course workload was manageable" show this, 66% are strongly agreed and 34% are uncertain. The graph of "The course was well organized (e.g. timely) access to materials, notification of changes, etc.)" show this, 66% are strongly agreed and 34% are uncertain. The graph of "Approximate level of your own attendance during the whole course" show this, 66% are strongly agreed and 34% are uncertain.



General Comments by Students about this course:

Strengths:

- The Course workload was manageable
- Clear Objectives
- Well organized material
- The course simulated students' interests and thought on the subject
- Course was well structured to achieve the learning outcomes

W**eaknesses:**

- No significance weakness was found

Dr. Ehtsham Azhar (MATH-763)

The graph of "The Course Objectives were clear" indicates this, 85% are strongly agreed and 15% are agreed. The graph of "The Course workload was manageable" show this, 85% are strongly agreed and 15% are agreed. The graph of "The course was well organized (e.g. timely) access to materials, notification of changes, etc.)" show this, 85% are strongly agreed and 15% are agreed. The graph of "Approximate level of your own attendance during the whole course" show this, 85% are strongly agreed and 15% are agreed.

Session Name: FALL-22 **Teacher Name:** Ehtasham Azhar **Course Name:** Advanced Fluid Mechanics

Section: A **Degree:** M.Phil(Mathematics) **Semester#** 1

1. The course objectives were clear.
2. The course workload was manageable
3. The course was well organized (e.g. timely) access to materials, notification of changes, etc)
4. Approximate level of your own attendence during the whole course
5. I practicipated actively in the course
6. I think I have made progress in this course
7. I think the Course was well structured to achive the learning outcomes
8. The learning and teaching methods encouraged participation.
9. The Overall enviroment in the class was conducive to learning.
10. Class rooms were Satisfactory
11. Learning materails (Lesson planes,Course Notes etc) were relevent and usefull.
12. Recomended reading Books etc. were relevent and appropriate.
13. The provision of learning rosources in the library was adequate and appropriate.
14. The provision of learning resources on the web was adequate and appropriate(if relevent)
15. The course stimulated my interest and though on the subject area
16. The pace of the Course was appropriate
17. Ideas and concept were presented clearly
18. The method of assesment were reasonable
19. Feedback on assessment were timely
20. Feedback on assessment was helpful
21. I understood the lectures
22. The material was well organized and presented
23. The instrucotor was responsive to student needs and problems
24. Had the instructor been regular throughout the course?
25. The material in the tutorials was usefull
26. I was happy with the amount of work needed for tutorials
27. The tutor dealt effectively with my problems
28. The Material in Practical was useful
29. The demonstrators dealt effectively with my problems.

General Comments by Students about this course:

Strengths:

- The demonstrators dealt effectively with students' problems
- The Course workload was manageable

- Clear Objectives
- Well organized material
- The course simulated students' interests and thought on the subject
- Course was well structured to achieve the learning outcomes

W**eaknesses:**

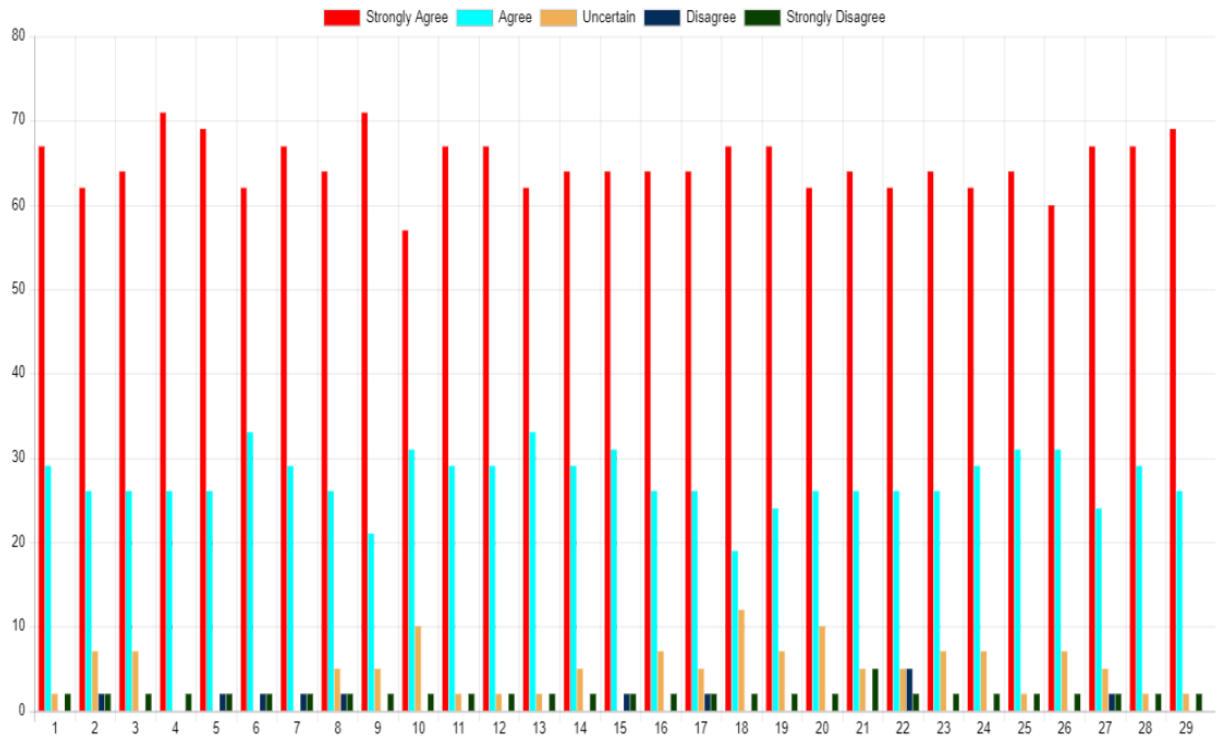
- No significance weakness was found

Dr. Sadia Medhit (MATH-778)

The graph of "The Course Objectives were clear" indicates this, 67% are strongly agreed and 29% are agreed,2% are uncertain and 2% are strongly disagreed. The graph of "The Course workload was manageable" show this, 64% are strongly agreed and 26% are agreed, 6% are uncertain,2% are disagreed and 2% are strongly disagreed. The graph of "The course was well organized (e.g. timely) access to materials, notification of changes, etc.)" show this, 65% are strongly agreed, 27% are agreed,7% are uncertain 1%are strongly disagreed.

Session Name: FALL-22 **Teacher Name:** Sadia Midhat **Course Name:** Cryptography

Section: A **Degree:** M.Phil(Mathematics) **Semester#** 1



1. The course objectives were clear.
2. The course workload was manageable
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8. The learning and teaching methods encouraged participation.
9. The Overall enviroment in the class was conducive to learning.
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28. The Material in Practical was useful
29. The demonstrators dealt effectively with my problems.

General Comments by Students about this course:

Strengths:

- The demonstrators dealt effectively with students' problems

- The Course workload was manageable
- Clear Objectives
- Well organized material
- The course simulated students' interests and thought on the subject
- Course was well structured to achieve the learning outcomes

W**eaknesses:**

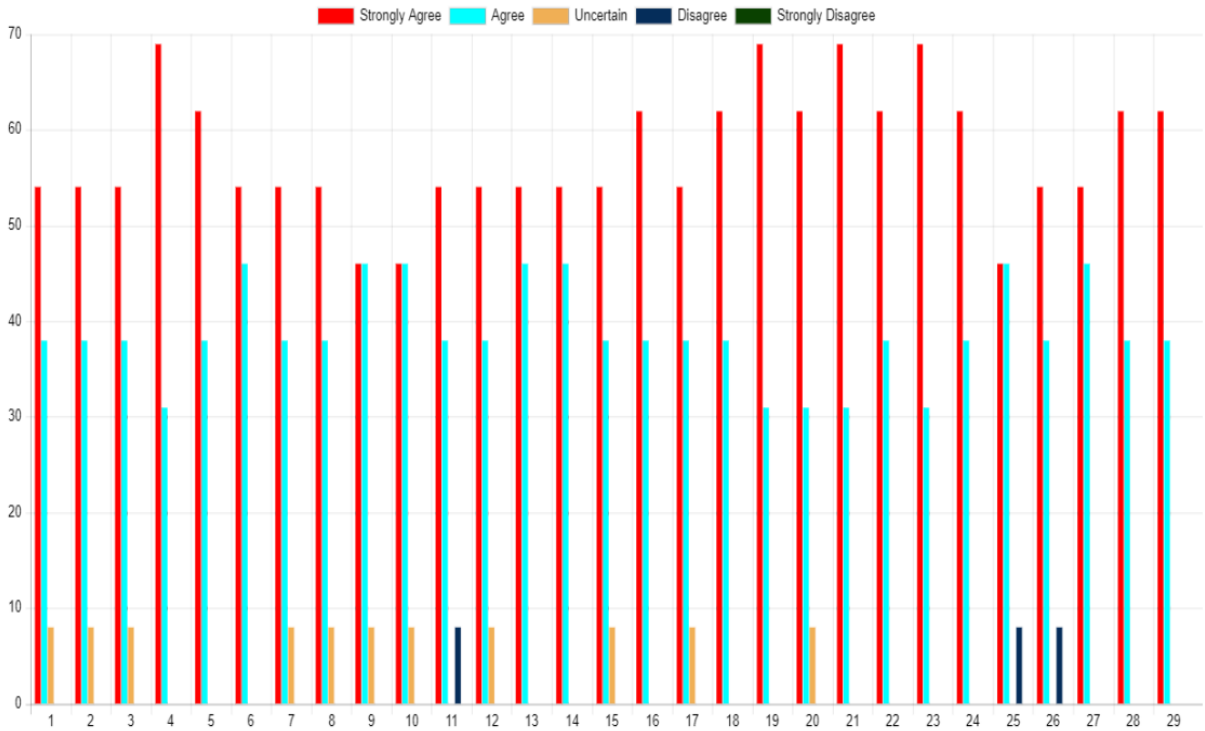
- No significance weakness was found

Prof. Dr. Muhammad Hanif (STAT-761)

The graph of "The Course Objectives were clear" indicates this, 54% are strongly agreed and 38% are agreed, 8% are uncertain. The graph of "The Course workload was manageable" show this, 54% are strongly agreed and 38% are agreed, 8% are uncertain. The graph of "The course was well organized (e.g. timely) access to materials, notification of changes, etc.)" show this, 54% are strongly agreed, 38% are agreed, 8% are uncertain.

Session Name: FALL-22 **Teacher Name:** Prof. Dr. Muhammad Hanif **Course Name:** Probability And Stochastic Process

Section: A **Degree:** M.Phil(Mathematics) **Semester#** 1



1. The course objectives were clear.
2. The course workload was manageable
3. The course was well organized (e.g. timely) access to materials, notification of changes, etc)
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7. I think the Course was well structured to achive the learning outcomes
8. The learning and teaching methods encouraged participation.
9. The Overall enviroment in the class was conducive to learning.
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11. Learning materails (Lesson planes,Course Notes etc) were relevent and usefull.
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28. The Material in Practical was useful
29. The demonstrators dealt effectively with my problems.

General Comments by Students about this course:

Strengths:

- The demonstrators dealt effectively with students' problems

- The Course workload was manageable
- Clear Objectives
- Well organized material
- The course simulated students' interests and thought on the subject
- Course was well structured to achieve the learning outcomes

W**eaknesses:**

- No significance weakness was found

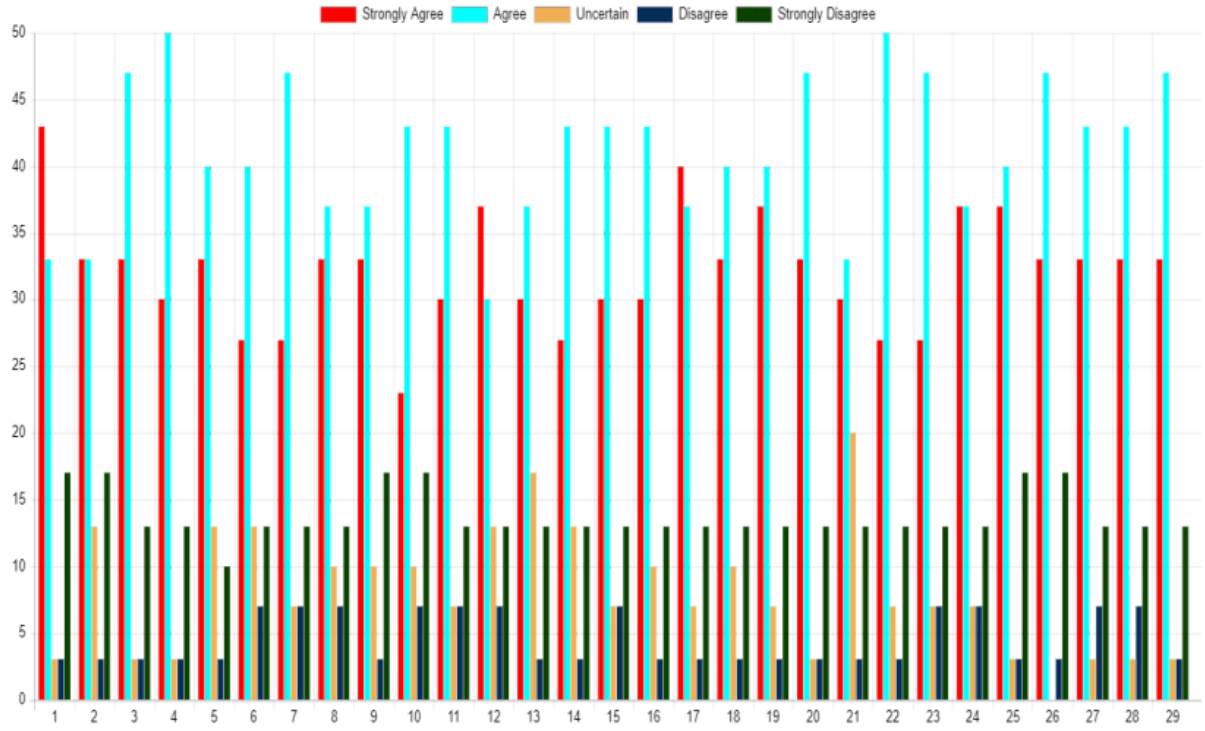
SPRING-23

Dr. Ehtsham Azhar (MATH-757)

The graph of "The Course Objectives were clear" indicates this, 44% are strongly agreed and 34% are agreed, 2% are uncertain, 3% are disagreed and 17% are strongly disagreed. The graph of "The Course workload was manageable" show this, 33% are strongly agreed and 33% are agreed,13% are uncertain, 3% are disagreed and 18% are strongly disagreed. The graph of "The course was well organized (e.g. timely) access to materials, notification of changes, etc.)" show this, 34% are strongly agreed, 47% are agreed, 3% are uncertain, 3% are disagreed and 13% are strongly disagreed.

Session Name: SPRING-23 | **Teacher Name:** Ehtasham Azhar | **Course Name:** Numerical Solution Of Ordinary Differential Equations

Section: A | **Degree:** M.Phil(Mathematics) | **Semester#** 2



1. The course objectives were clear.
2. The course workload was manageable
3. The course was well organized (e.g. timely) access to materials, notification of changes, etc)
4. Approximate level of your own attendence during the whole course
5. I practicipated actively in the course
6. I think I have made progress in this course
7. I think the Course was well structured to achive the learning outcomes
8. The learning and teaching methods encouraged participation.
9. The Overall enviroment in the class was conducive to learning.
10. Class rooms were Satisfactory
11. Learning materails (Lesson planes,Course Notes etc) were relevent and usefull.
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26. I was happy with the amount of work needed for tutorials
27. The tutor dealt effectively with my problems
28. The Material in Practical was useful
29. The demonstrators dealt effectively with my problems.

General Comments by Students about this course:

Strengths:

- The demonstrators dealt effectively with students' problems

- The Course workload was manageable
- Clear Objectives
- Well organized material
- The course simulated students' interests and thought on the subject
- Course was well structured to achieve the learning outcomes

W**eaknesses:**

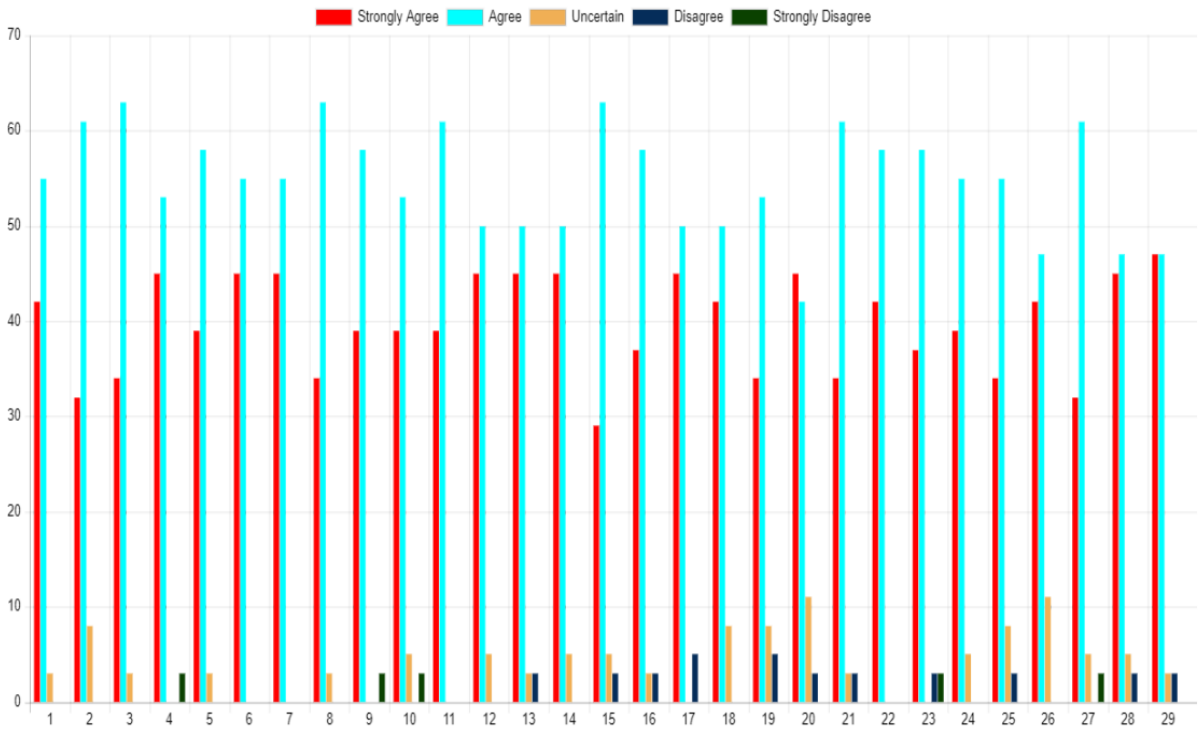
- No significance weakness was found

Dr. Nasir Ali (ECON-754)

The graph of "The Course Objectives were clear" indicates this, 42% are strongly agreed and 56% are agreed, 2% are uncertain. The graph of "The Course workload was manageable" show this, 32% are strongly agreed and 61% are agreed, 7% are uncertain. The graph of "The course was well organized (e.g. timely) access to materials, notification of changes, etc.)" show this, 35% are strongly agreed, 62% are agreed, 3% are uncertain.

Session Name: SPRING-23 | **Teacher Name:** Nasir Ali | **Course Name:** Econometrics Techniques And Applications

Section: A | **Degree:** M.Phil(Mathematics) | **Semester#** 2



1. The course objectives were clear.
2. The course workload was manageable
3. The course was well organized (e.g. timely) access to materials, notification of changes, etc)
4. Approximate level of your own attendence during the whole course
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6. I think I have made progress in this course
7. I think the Course was well structured to achive the learning outcomes
8. The learning and teaching methods encouraged participation.
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27. The tutor dealt effectively with my problems
28. The Material in Practical was useful
29. The demonstrators dealt effectively with my problems.

General Comments by Students about this course:

Strengths:

- The demonstrators dealt effectively with students' problems
- The Course workload was manageable
- Clear Objectives
- Well organized material
- The course simulated students' interests and thought on the subject
- Course was well structured to achieve the learning outcomes

W**eaknesses:**

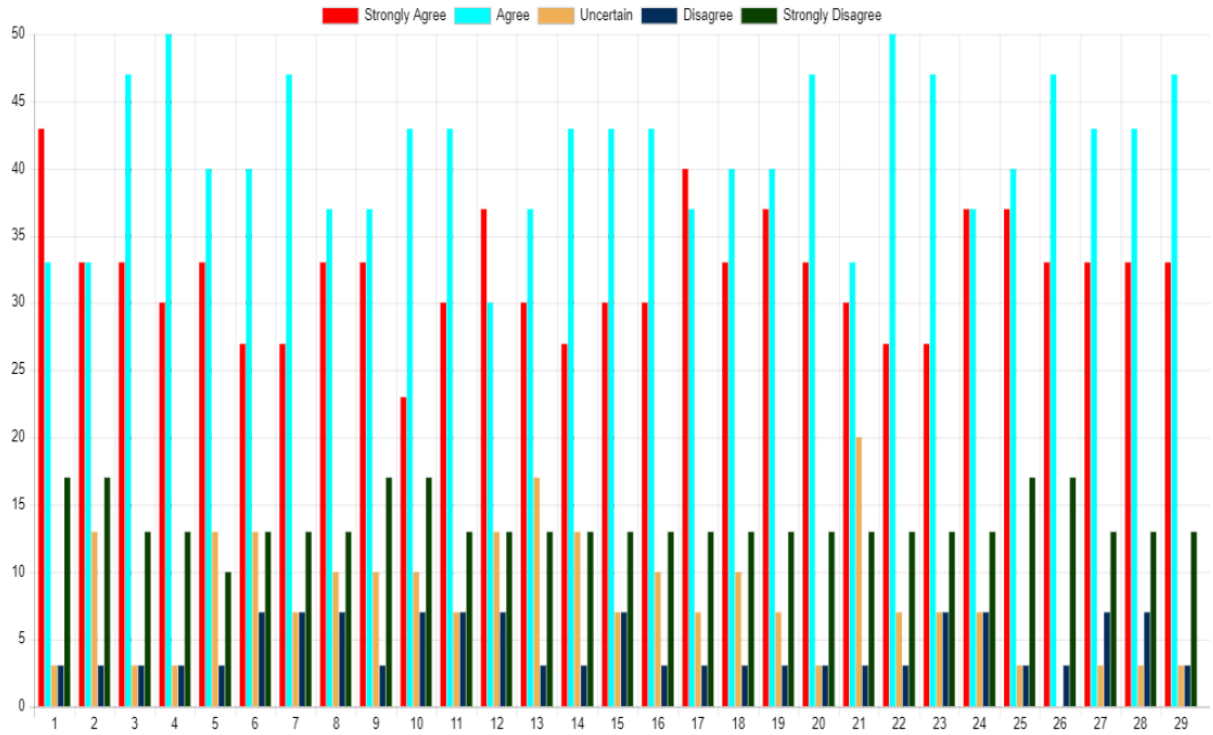
- No significance weakness was found

Dr. Ehtsham Azhar (MATH-719)

The graph of "The Course Objectives were clear" indicates this, 43% are strongly agreed and 33% are agreed,3% are uncertain,3% are disagreed and 18% are strongly disagreed. The graph of "The Course workload was manageable" show this, 33% are strongly agreed and 33% are agreed,13% are uncertain, 3% are disagree and 17% are strongly disagree. The graph of "The course was well organized (e.g. timely) access to materials, notification of changes, etc.)" show this, 35% are strongly agreed, 62% are agreed,3% are uncertain.

Session Name: SPRING-23 **Teacher Name:** Ehtasham Azhar **Course Name:** Special Problem

Section: A **Degree:** M.Phil(Mathematics) **Semester#** 2



1. The course objectives were clear.
2. The course workload was manageable
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26. I was happy with the amount of work needed for tutorials
27. The tutor dealt effectively with my problems
28. The Material in Practical was useful
29. The demonstrators dealt effectively with my problems.

General Comments by Students about this course:

Strengths:

- The demonstrators dealt effectively with students' problems
- The Course workload was manageable

- Clear Objectives
- Well organized material
- The course simulated students' interests and thought on the subject
- Course was well structured to achieve the learning outcomes

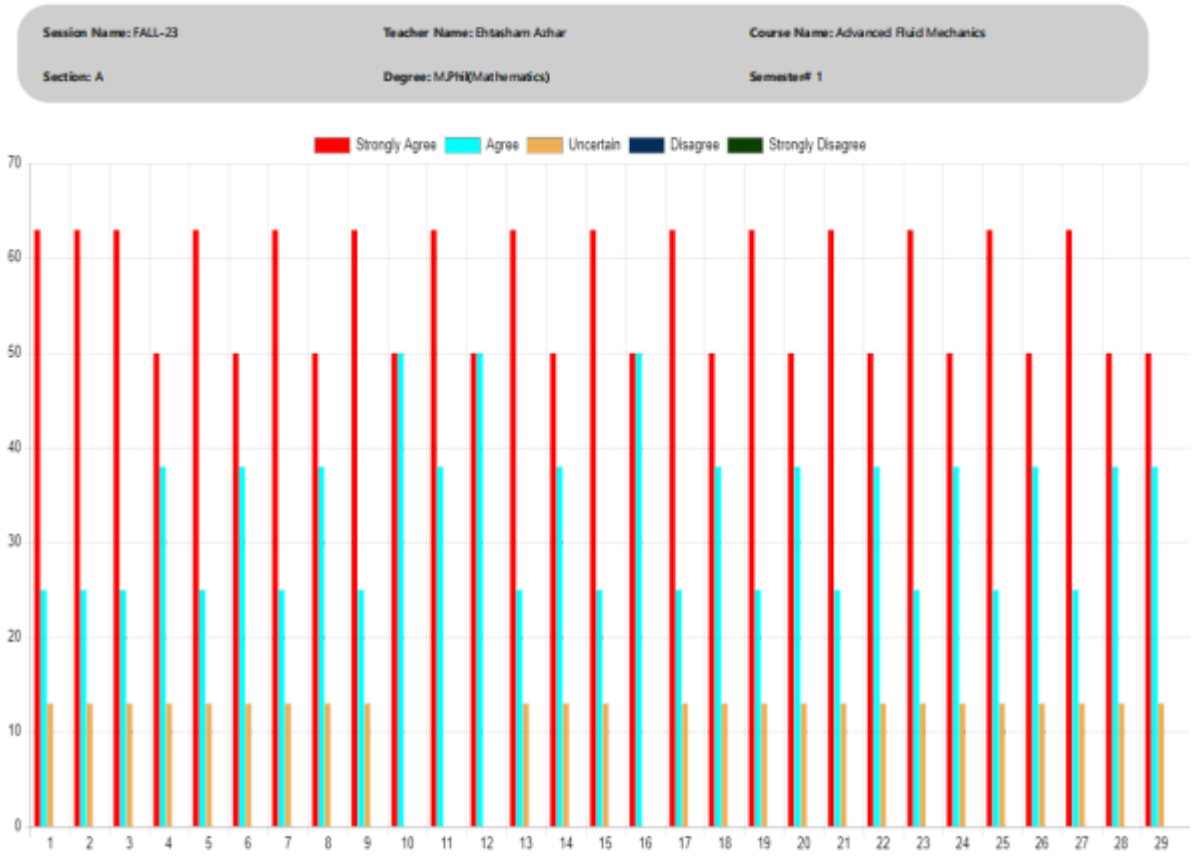
W**eaknesses:**

- No significance weakness was found

FALL 2023

Dr. Ehtsham Azhar (MATH-763)

The graph of "The Course Objectives were clear" indicates this, 62% are strongly agreed and 25% are agreed, 13% are uncertain. The graph of "The Course workload was manageable" show this, 62% are strongly agreed and 25% are agreed, 13% are uncertain. The graph of "The course was well organized (e.g. timely) access to materials, notification of changes, etc.)" show this, 62% are strongly agreed, 25% are agreed and 13% are uncertain.



General Comments by Students about this course:

Strengths:

- The demonstrators dealt effectively with students' problems
- The Course workload was manageable

- Clear Objectives
- Well organized material
- The course simulated students' interests and thought on the subject
- Course was well structured to achieve the learning outcomes

W**eaknesses:**

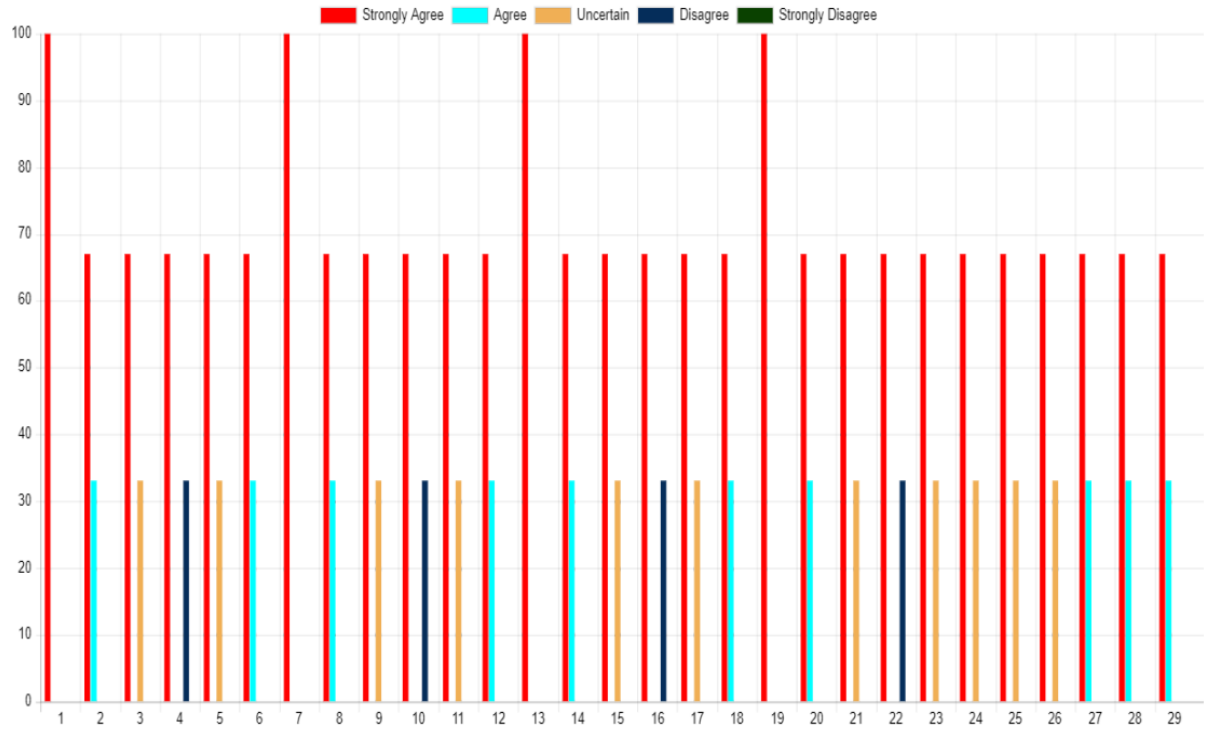
- No significance weakness was found

Dr. Sadia Midhat (MATH-778)

The graph of "The Course Objectives were clear" indicates this, 100% are strongly agreed. The graph of "The Course workload was manageable" show this, 68% are strongly agreed and 32% are agreed. The graph of "The course was well organized (e.g. timely) access to materials, notification of changes, etc.)" show this, 68% are strongly agreed, 32% are uncertain.

Session Name: FALL-23 **Teacher Name:** Sadia Midhat **Course Name:** Cryptography

Section: A **Degree:** M.Phil(Mathematics) **Semester#** 1



1. The course objectives were clear.
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7. I think the Course was well structured to achive the learning outcomes
8. The learning and teaching methods encouraged participation.
9. The Overall enviroment in the class was conducive to learning.
10. Class rooms were Satisfactory
11. Learning materails (Lesson planes,Course Notes etc) were relevent and usefull.
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26. I was happy with the amount of work needed for tutorials
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29. The demonstrators dealt effectively with my problems.

General Comments by Students about this course:

Strengths:

- The demonstrators dealt effectively with students' problems
- The Course workload was manageable

- Clear Objectives
- Well organized material
- The course simulated students' interests and thought on the subject
- Course was well structured to achieve the learning outcomes

W**eaknesses:**

- No significance weakness was found

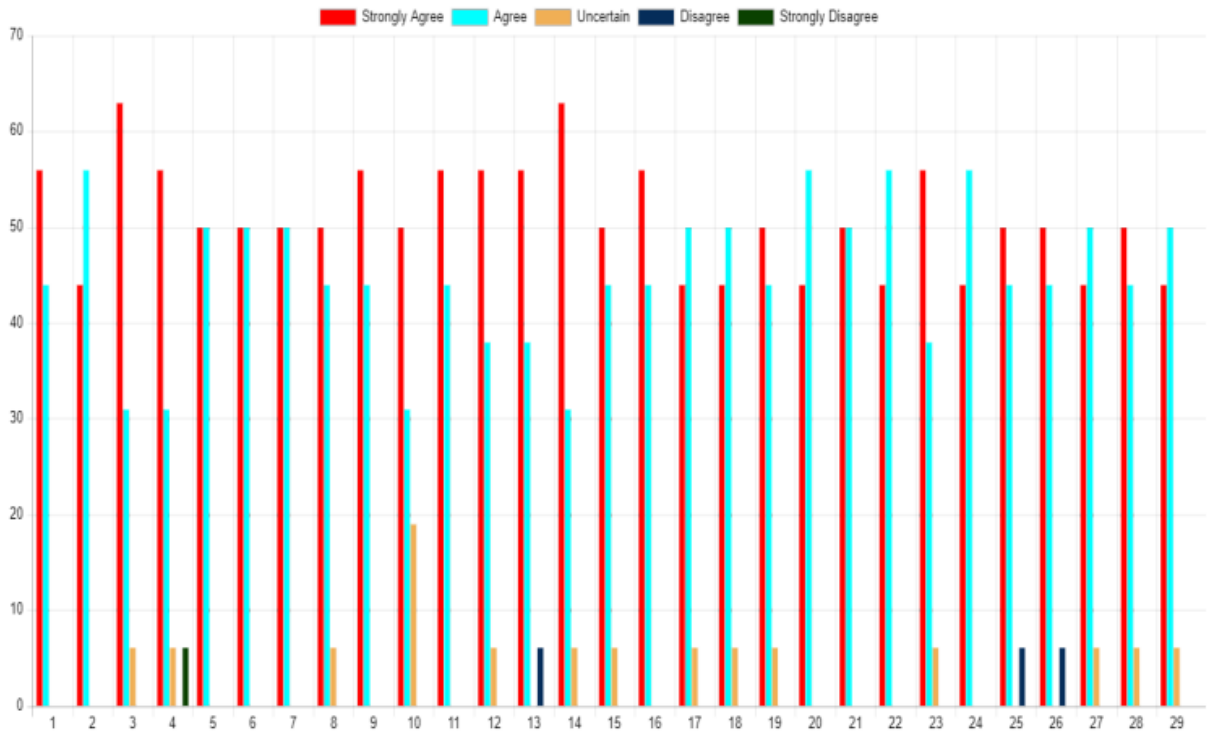
SPRING 24

Dr. Asif Nawaz (CSC-763)

The graph of "The Course Objectives were clear" indicates this, 55% are strongly agreed and 45% are agreed. The graph of "The Course workload was manageable" show this, 45% are strongly agreed and 55% are agreed. The graph of "The course was well organized (e.g. timely) access to materials, notification of changes, etc.)" show this, 63% are strongly agreed, 31% are agreed and 6% are uncertain.

Session Name: SPRING-24 **Teacher Name:** Asif Nawaz **Course Name:** Research Methods & Statistical Analysis

Section: A **Degree:** M.Phil(Mathematics) **Semester#** 2



1. The course objectives were clear.
2. The course workload was manageable
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General Comments by Students about this course:

Strengths:

- The demonstrators dealt effectively with students' problems
- The Course workload was manageable

- Clear Objectives
- Well organized material
- The course simulated students' interests and thought on the subject
- Course was well structured to achieve the learning outcomes

W**eaknesses:**

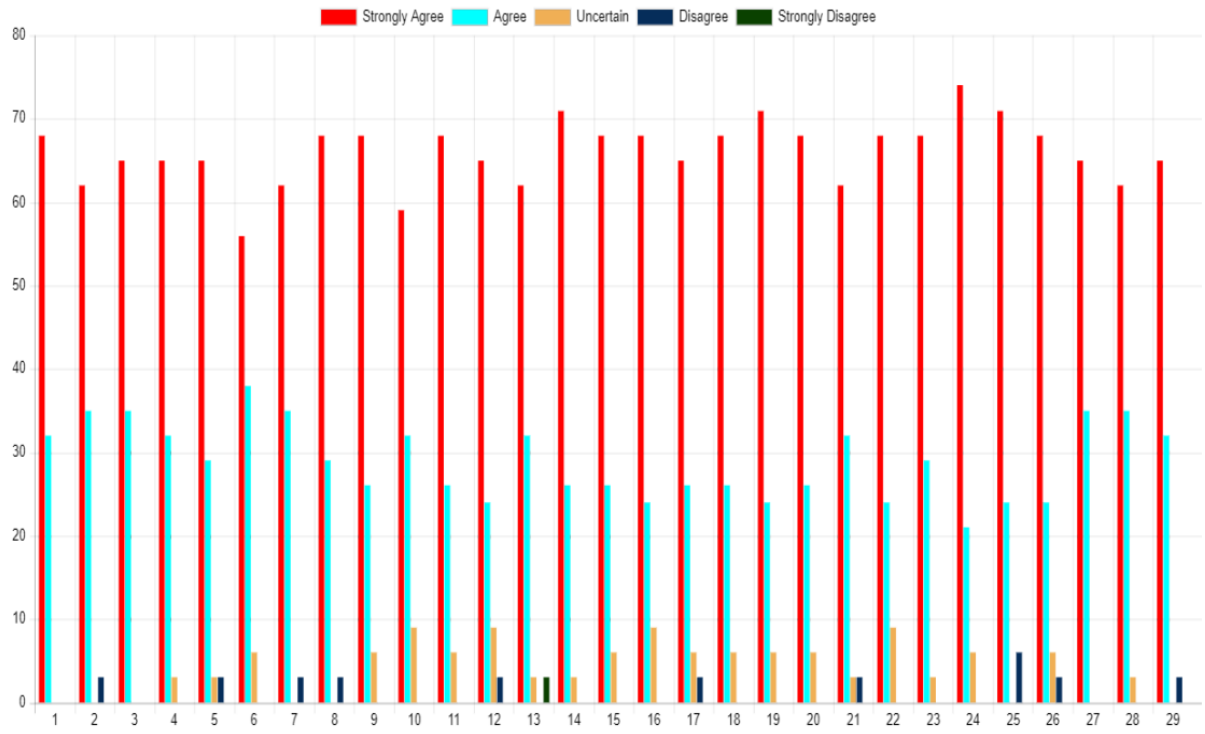
- No significance weakness was found

Dr. Ehtsham Azhar (MATH-720)

The graph of "The Course Objectives were clear" indicates this, 68% are strongly agreed and 32% are agreed. The graph of "The Course workload was manageable" show this, 62% are strongly agreed and 35% are agreed and 3% are disagree. The graph of "The course was well organized (e.g. timely) access to materials, notification of changes, etc.)" show this, 65% are strongly agreed, 35% are agreed.

Session Name: SPRING-24 **Teacher Name:** Ehtasham Azhar **Course Name:** Seminar

Section: A **Degree:** M.Phil(Mathematics) **Semester#** 2



1. The course objectives were clear.
2. The course workload was manageable
3. The course was well organized (e.g. timely) access to materials, notification of changes, etc)
4. Approximate level of your own attendence during the whole course
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29. The demonstrators dealt effectively with my problems.

General Comments by Students about this course:

Strengths:

- The demonstrators dealt effectively with students' problems
- The Course workload was manageable

- Clear Objectives
- Well organized material
- The course simulated students' interests and thought on the subject
- Course was well structured to achieve the learning outcomes

W**eaknesses:**

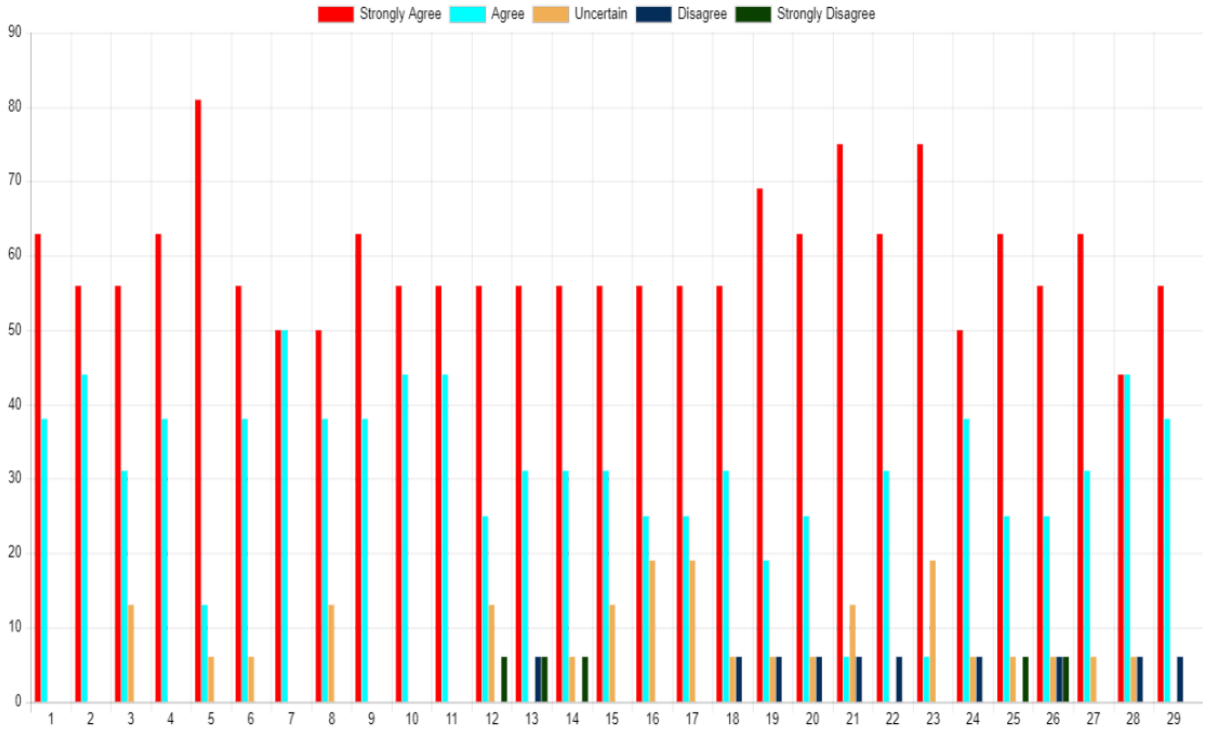
- No significance weakness was found

Dr. Muhammad Jamal (MATH-766)

The graph of "The Course Objectives were clear" indicates this, 62% are strongly agreed and 38% are agreed. The graph of "The Course workload was manageable" show this, 56% are strongly agreed and 44% are agreed. The graph of "The course was well organized (e.g. timely) access to materials, notification of changes, etc.)" show this, 56% are strongly agreed, 31% are agreed and 13% are uncertain.

Session Name: SPRING-24 **Teacher Name:** Dr. Muhammad Jamal **Course Name:** Mathematical Models In Biomathematics

Section: A **Degree:** M.Phil(Mathematics) **Semester#** 2



1. The course objectives were clear.
2. The course workload was manageable
3. The course was well organized (e.g. timely) access to materials, notification of changes, etc)
4. Approximate level of your own attendence during the whole course
5. I practicipated actively in the course
6. I think I have made progress in this course
7. I think the Course was well structured to achive the learning outcomes
8. The learning and teaching methods encouraged participation.
9. The Overall enviroment in the class was conducive to learning.
10. Class rooms were Satisfactory
11. Learning materails (Lesson planes,Course Notes etc) were relevent and usefull.
12. Recomended reading Books etc. were relevent and appropriate.
13. The provision of learning rosources in the library was adequate and appropriate.
14. The provision of learning resources on the web was adequate and appropriate(if relevent)
15. The course stimulated my interest and though on the subject area
16. The pace of the Course was appropriate
17. Ideas and concept were presented clearly
18. The method of assesment were reasonable
19. Feedback on assessment were timely
20. Feedback on assessment was helpful
21. I understood the lectures
22. The material was well organized and presented
23. The instrucotor was responsive to student needs and problems
24. Had the instructor been regular throughout the course?
25. The material in the tutorials was usefull
26. I was happy with the amount of work needed for tutorials
27. The tutor dealt effectively with my problems
28. The Material in Practical was useful
29. The demonstrators dealt effectively with my problems.

General Comments by Students about this course:

Strengths:

- The demonstrators dealt effectively with students' problems
- The Course workload was manageable

- Clear Objectives
- Well organized material
- The course simulated students' interests and thought on the subject
- Course was well structured to achieve the learning outcomes

W**eaknesses:**

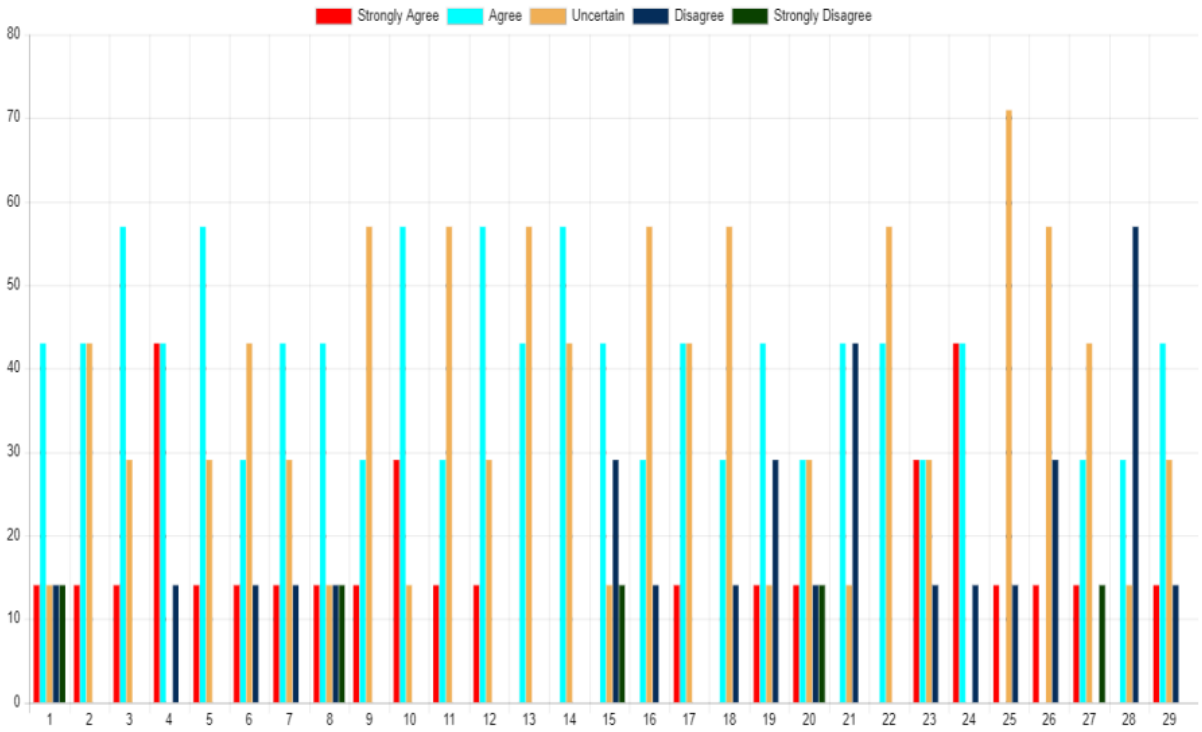
- No significance weakness was found

Dr. Faqir Muhammad (ECON-754)

The graph of "The Course Objectives were clear" indicates this, 14% are strongly agreed and 44% are agreed,14% are uncertain, 14% are disagreed and 14% are strongly disagreed. The graph of "The Course workload was manageable" show this, 14% are strongly agreed and 44% are agreed and 44% are certain. The graph of "The course was well organized (e.g. timely) access to materials, notification of changes, etc.)" show this, 14% are strongly agreed, 57% are agreed and 29% are uncertain.

Session Name: SPRING-24 **Teacher Name:** Faqir Muhammad **Course Name:** Econometrics Techniques And Applications

Section: A **Degree:** M.Phil(Mathematics) **Semester#** 2



1. The course objectives were clear.
2. The course workload was manageable
3. The course was well organized (e.g. timely) access to materials, notification of changes, etc)
4. Approximate level of your own attendence during the whole course
5. I practicipated actively in the course
6. I think I have made progress in this course
7. I think the Course was well structured to achive the learning outcomes
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General Comments by Students about this course:

Strengths:

- The demonstrators dealt effectively with students' problems
- The Course workload was manageable

- Clear Objectives
- Well organized material
- The course simulated students' interests and thought on the subject
- Course was well structured to achieve the learning outcomes

W**eaknesses:**

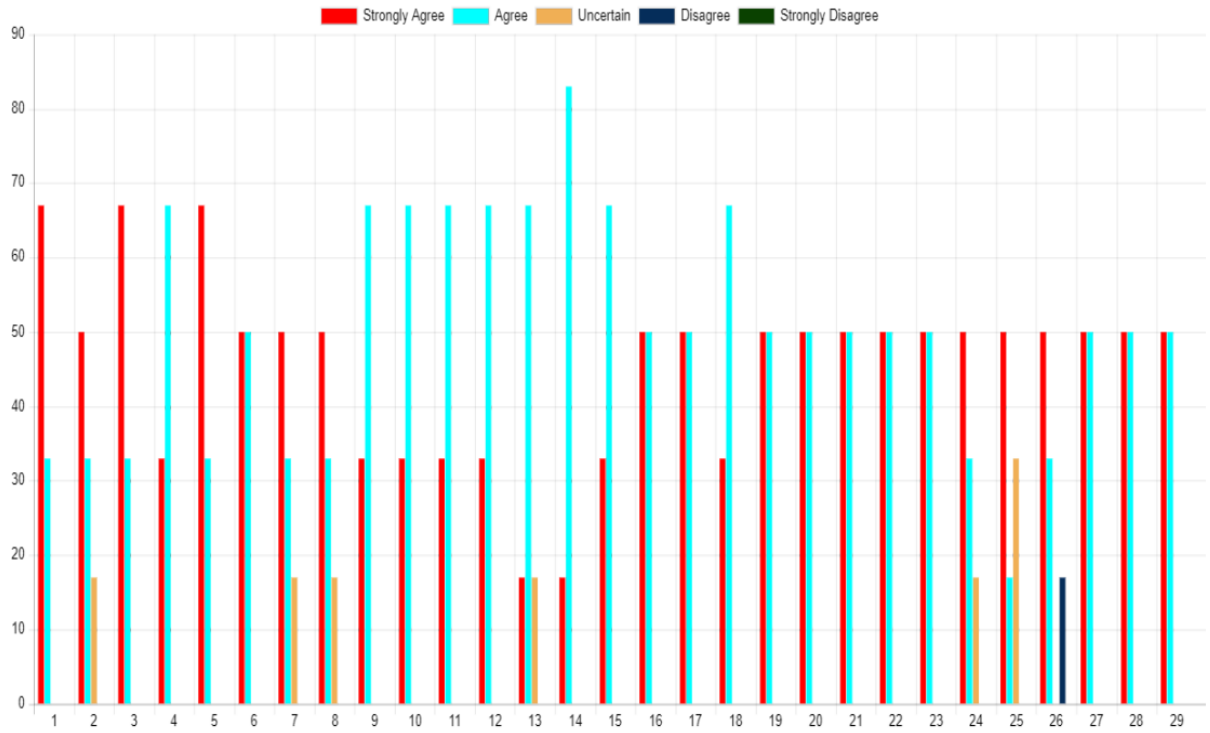
- No significance weakness was found

Dr. Hashmat Ali (MATH-754)

The graph of "The Course Objectives were clear" indicates this, 67% are strongly agreed and 33% are agreed. The graph of "The Course workload was manageable" show this, 50% are strongly agreed, 33% are agreed and 17% are certain. The graph of "The course was well organized (e.g. timely) access to materials, notification of changes, etc.)" show this, 67% are strongly agreed and 33% are agreed.

Session Name: SPRING-24 **Teacher Name:** Hashmat Ali Malik **Course Name:** Integral Equations

Section: A **Degree:** M.Phil(Mathematics) **Semester#** 2



1. The course objectives were clear.
2. The course workload was manageable
3. The course was well organized (e.g. timely) access to materials, notification of changes, etc)
4. Approximate level of your own attendence during the whole course
5. I practicipated actively in the course
6. I think I have made progress in this course
7. I think the Course was well structured to achive the learning outcomes
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W**eaknesses:**

- No significance weakness was found

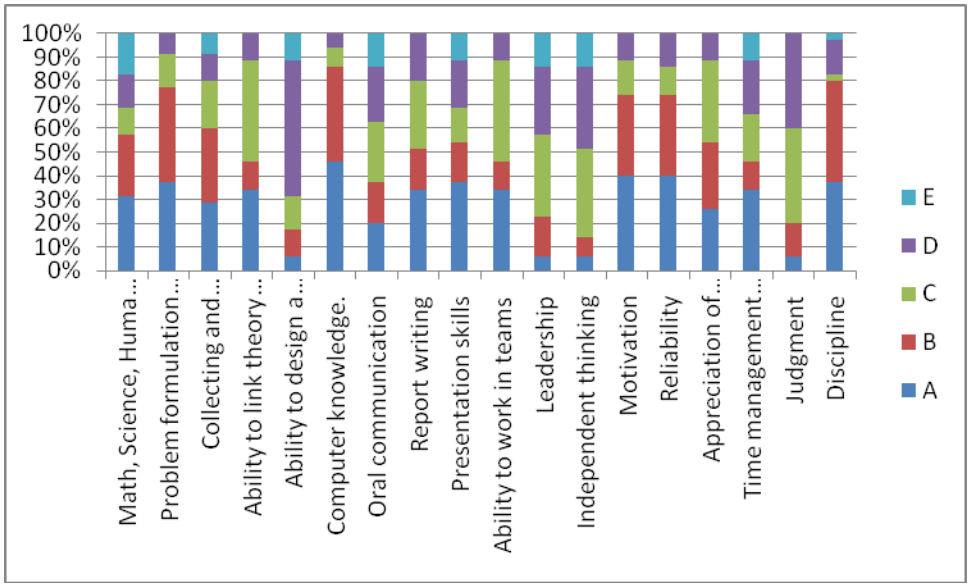
Performa 5: Faculty Survey Report

Brief summary of Results of Faculty Survey Report

The data were collected from seven faculty members who answered the following responses regarding the different questionnaires. As concerned to job satisfaction level and promotion aspects, the faculty members responded that 75% of faculty members were very satisfied and 25% were not very satisfied with their job clarity about promotion process. Most of the faculty members were satisfied with the cooperation received from their colleague, job security and departmental environment. 30% faculty members are not very satisfied from administrative support from the department and their promotion and progress through ranks. As it has already been mention, that there is limited number of faculty so more work load was on current teachers and availability of more teachers are required in this regard.

Performa 8: Employer Survey

The objective of this survey was to obtain employers input on the quality of education, the department is providing and to assess the quality of the academic program. The survey included University graduates employed in different organizations. A total of 35 employers provided the data. The results were shown as follows.



The above chart shows the responses of the employer's interest in Math, Science, Humanities and professional discipline are as 30% excellent, 10% responded very good. 10% were answered excellent on their independent thinking 5% were agreed on the improvement of leadership qualities. 30% were responded excellent on interpersonal skills and time management skills.

CRITERION 2: CURRICULUM DESIGN AND ORGANIZATION:

Degree Title: M.Phil Mathematics

Intent: All the courses for the degree program were accredited by the Higher Education Commission, prepared by a committee consists of experts and qualified subject specialists from the different universities and research organizations from Pakistan. First curriculum is approved at department level from Board of studies comprising of all faculty members that are responsible for updating the curriculum. The Chairperson is the convener of this body. The courses are then sent to the Board of Faculty for approval. The Dean of the Faculty, who is also the convener, conducts the meeting. As per University Rules, after the approval of courses from the Faculty Board, these are placed before the University Academic Council for their approval.

Definition of Credit Hour

A student must complete a definite number of credit hours as per university policy for the specific degree. One credit hour is one theory lecture or two hours (practical work/weeks). One credit hour carries 20 marks. The semester consists of 18 weeks.

Degree Plan

Presently, the program M.Phil (Mathematics) is a two academic years or a minimum of four and maximum of eight semester's duration program after bachelor's degree.

M.Phil (Mathematics)

Two years M.Phil degree program comprising of 04 semesters, a student has to take a total load of 35 credit hours.

Examination and grading policy

For each course, the student evaluation is done by midterm examination, assignment/quizzes and final examination. A scholar who misses the mid-term examination is just not allowed a make-up examination and is awarded zero marks in that examination. In case a student does not appear in the final examination, he/she will likely be deemed to have failed in that examination. The grading policy of each course is prescribed as follows

Mid Examination	30%
Assignments	10%
Final Examination	60%

Grade point Average.

The maximum grade point average is 4.00 and minimum grade point average for obtaining the degree is 2.5. The student may enroll in the next semester if he/she must fulfill the following CGPA criteria in each semester.

Semester CGPA

1st 1.50

2nd 1.75

3rd 2.00

4th 2.50

Eligibility Criteria for Examination

In each course, the minimum 75% attendance is required to sit in the examination.

Scheme of Studies for M.Phil Mathematics.

Major Courses:

Course Code	Course Title	Credit Hour
MATH -751	Advanced Functional Analysis	3(3-0)
MATH -752	Advanced Ring Theory	3(3-0)
MATH -753	Mathematical Techniques for Boundary Value Problem	3(3-0)
MATH -754	Integral Equations	3(3-0)
MATH -755	Advanced Real Analysis	3(3-0)
MATH -756	Advanced Partial Differential Equations	3(3-0)
MATH -757	Numerical Solution of Ordinary Differential Equations	3(3-0)
MATH -758	Perturbation Methods	3(3-0)
MATH -759	Optimization Theory	3(3-0)
MATH -760	Advanced Topology	3(3-0)
MATH-761	Advanced Complex Analysis	3(3-0)
MATH-762	Modern Algebra and Applications	3(3-0)
MATH-763	Advanced Fluid Mechanics	3(3-0)
MATH -764	Non-Newtonian Fluid Mechanics	3(3-0)

MATH -765	Fixed Point Theory and Applications	3(3-0)
MATH -766	Mathematical Models in Biomathematics	3(3-0)
MATH -767	Financial Mathematics	3(3-0)
MATH -768	Advanced Topics in Graph Theory	3(3-0)
MATH -769	Finite Element Method	3(3-0)
MATH -770	Numerical Linear Algebra	3(3-0)
MATH -771	Numerical Solution of Partial Differential Equations	3(3-0)
MATH -774	Computational Fluid Dynamics	3(3-0)
MATH -775	Algebraic Number Theory	3(3-0)
MATH -776	Fuzzy Logic and Algebra	3(3-0)
MATH -777	Geometric Function Theory	3(3-0)
MATH -778	Cryptography	3(3-0)
MATH-719	Special Problem	1(1-0)
MATH-720	Seminar	1(1-0)

Minor Courses:

Minor courses would be taken from the approved scheme of study.

Standard 2-1: The curriculum must be consistent and support the Program's documented objectives.

The curriculum is designed according to HEC criteria. The Curriculum also fulfilled the general requirements of the degree, it is well updated.

Standard 2-2: The curriculum supports the programs documented Objectives

The curriculum fits very well and satisfies the core requirements for the program's documented objectives.

Standard 2-3: Theoretical backgrounds, problem analysis and solution design must be stressed within the program's core material. Currently, the department is only offering

the M.Phil degree. The requirements for the degree are briefly discussed.

Table 6: Statistics Courses versus Program Outcome

	Elements		
	Theoretical Background	**Problem Analysis**	**Solution Design**
Courses	MATH-751,MATH-752,MATH-753, MATH-754,MATH-755,MATH-756, MATH-757,MATH-758, MATH-759	MATH-760, MATH-761, MATH-762, MATH-763, MATH-764, MATH-765, MATH-766, MATH-767, MATH-768, MATH769	MATH-770, MATH-771, MATH-774, MATH-775, MATH-776, MATH-777, MATH-778, MATH-719, MATH-720

Standard 2-4: The curriculum satisfied the core requirement laid down by accreditation bodies

Not Applicable

Standard 2-5: The curriculum satisfied the major requirement laid down by HEC.

The curriculum satisfies the major requirement laid down by HEC.

Standard 2-6: The curriculum satisfied the general education, arts and Professional and other discipline requirement as laid by HEC

The important courses that indicate this component are included in the curriculum and are being carried out in all the current disciplines successfully and are being taught by technically qualified teachers.

Standard 2-7: Information technology component of the curriculum must be integrated throughout the program.

The Practical oriented information technology courses are included in the curriculum. Highly qualified teachers teach these courses and help the students to improve their computer and communication skills.

CRITERION 3: LABORATORIES AND COMPUTING FACILITIES

There is just one personal Laboratory with 5 computer systems. Computer Laboratory is used for practical purposes and demonstration to graduate students in their introductory major and practical oriented courses. Therefore, advance research is nearly inconceivable without suitable research facilities like high tech lab, access to international publications and research resources and other computer accessories. Updated software's are required.

Shortcomings in Lab infrastructure

- Software Manuals of each subject are not available.
- Lab Technician is required
- One computer laboratory with at least 30 computer systems required

Location and Area:

Faculty of Sciences, Department of Mathematics, 1st floor, New AcademicBlock.

Adequacy for instruction:

Instruction tools like one multimedia is available and two LEDs are installed in two classrooms.

Standard-3.2: There must be support personal for instruction and maintaining the laboratories

There is no Laboratory Attendant for the Department of Mathematics. No technical assistance is available.

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

- **Computing Facilities Support:** Available to all Faculty members but this computing facilities is not available to the graduate students.

- **Safety arrangements:** There is no proper safety arrangement and no security plans are in the case of emergency. This program is being taught in class rooms that are located on the 1st and 2nd floors; there is no emergency exit for the lab and classroom. No fire extinguishers have been installed in any laboratory. No first aid kits/ facilities provided in the laboratory.

CRITERION 4: STUDENT SUPPORT AND ADVISING

The supportive and cooperative faculty for the program of mathematics has always been providing future and career guidelines to the students.

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

- The courses offered are specifically designed to fulfill the requirements of public and private sector industries or institutions.
- At graduate level Course subjects are offered as per scheme of study provided by HEC.
- Elective courses are offered as per strategy of HEC and the university. The courses from outside the department are also offered as per scheme of study provided by HEC.
- For graduate Programs, a variety of courses are offered according to demand of the profession.

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

- In the Mathematics program, normally for the courses consisting of theory as well as practical, same instructor is employed so that the problems can be minimized.
- To be certain effective interaction between students, faculty and teaching assistants at the time of course formulation both theoretical and practical aspects are targeted.
- Theoretical problems with applications are also explained and different

assignment is also given to the students whereas practical are carried out in the lab.

- Mathematics is a very broad subject so the emphasis is always given on its practical aspects in different field of science.

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

Several steps have been taken to provide students guidance such as:

- Many scholar aid programs regarding admission, scholarship schemes, and many others are provided by university.
- The teachers prove to be a gigantic parental help for the students and are always trying to solve student problems.
- The teachers prove to be a big parental support for the students and are helpful in Solving students' problems, however currently there is no parent teacher association.
- Students are informed about the program requirement through the office of the Chairman.
- Director, Student Affairs are appointed by university who is ready to help the students for tutorial and counseling for extracurricular activities. However, there is no counseling cell.

Weaknesses:

- Student advisory committee should be formed at this level.
- There is no such arrangement of job festivals, seminars and other communication skills for scholars to engage with the worldwide.

CRITERION 5: PROCESS CONTROL

The program exercises quality control in the entire techniques where in predominant capabilities are delivered. As the scholar becomes the responsibility right after the admission, the process begins from his admission and registration leading in the direction of the end of the academic years and even after that. It's the responsibility to maintain fine control in each process of the education life of the scholar for which some necessities must be met:

Standard-5.1: The process by which students are admitted to the program must be based on quantitative and qualitative criteria

- The applications of the candidates are permitted within the due date of admission announced by the institution in an advertisement in the newspapers and on the university web site.
- Number of seats available in the discipline is approved by the Academic council.
- The candidate looking for admission need to be resident of Punjab Barani areas except the children of university employees. Depending upon the availability of seats, the candidates from the areas external from the Barani areas are additionally eligible.
- The student seeking admission to the degree of M.Phil mathematics must have passed the Sixteen years of schooling or 4-year education after HSSC/F.A./F.Sc./Grade 12, equivalent will be required for admission in master's degree. Required aggregated CGPA of not less than 2.50 under semester system or 45% of the marks secured under annual examination system or its equivalent in the field of study. Entry test (admission test) will be conducted by the university itself through committee approved for the purpose or by engaging renowned testing service provider and it is mandatory to qualify with 50% marks. The process of admission is a reputable process and is followed as per rules and criteria set by the university. For this purpose,

an advertisement is given in the national newspapers and on the university website by the Registrar office which announces the date of the merit lists.

- The lists are displayed right after the completion of whole processes. The selected students are offered register their names after paying the fee dues.

Standard-5.2: The process by which students are admitted to the program must be clearly documented. This process must be periodically evaluated to ensure that it is meeting its objectives

- After the submission of fee, the student names, after completion of the admission process, are forwarded to the registrar office for suitable registration in the prescribed discipline and registration numbers are issued to the scholars.
- Scholars are evaluated through mid, final and useful practical oriented test and through assignments and exclusive research proposals. Subject Quizzes are also helpful for the evaluation of capabilities of scholars.
- Evaluation is done through the result of each semester, if the students fulfill criteria of the university; they are promoted to the next semester.

Standard-5.3: 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**

- Recruitment policy followed the university is recommended by HEC induction of all posts is done as per rule. Vacant and newly created posts are advertised in the national newspapers and on the university website; applications are received by the registrar office.
- Call letters are issued to the short listed candidates on the basis of their experiences, qualification, publications and other qualities / activities as fixed by the university.
- The candidates are interviewed by the university selection board. The candidates having any previous experience, publications or any additional qualification are entertained. Principal and alternate candidate are selected on merit.
- Appointment letter has been given to employees after the Syndicate approval.
- Induction of new candidates depends upon the number of approved vacancies.
- Standard set by HEC are considered.
- At present, no procedure exists for retaining highly qualified faculty members,

however, the revised pay scales of structures is quite attractive.

- HEC also supports appointment of highly qualified members as National Professors and deputes them in various departments of the university.

Standard-5.4: This process must be periodically evaluated to ensure that it is meeting its objectives.

- As it has already been mentioned that the department of mathematics has limited no of teachers but due this they have performed well and achieved the good and maximum goal with the minimum number of time.
- The teachers teach in a friendly way and revise and update the curriculum as required.
- Although the subject books form the authentic authors are hardly available in the library but their cheap Asian editions are available in the markets. Teachers also provide the students with photo state copies of some important books, documents and notes.
- Teachers organize their lectures from the books and from internet and provide them to scholars. Students are additionally given small study assignments, which, the teachers know that they can go through with the support of literature and web facility available in the university library.
- Seminars are also being conducted at small level so that to motivate and guide the students to do research.

Standard-5.5: The process of recruiting and retaining highly qualified faculty members must be in place and clearly documented.

- The evaluation of the students' capabilities is a continuous process which carries on throughout the academic years. The evaluation procedure consists of quizzes, mid and final examinations, practical formulas, assignments and reports, oral and technical presentations.
- At the end of the academic years, the final examinations are held after which, the result is notified. The exams are taken to assess the capabilities of students by asking applied questions and problems about the different dimensions of the subject which help the students to be completely evaluated. Only the students passing this exam are awarded the degree.
- Candidates who secure 80% or more are awarded a gold medal are awarded to the students on the annual convocation that is held late every year.

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

Table 7: Faculty Distribution by Faculty Specialization

S. No.	Name	Position	Qualification	Specialization
2	Dr. Muhammad Jamal	Associate Professor	PhD	Mathematical Modeling & Simulation, Analytical Dynamical Systems.
1	Dr. Saima Mustafa	Associate Professor	PhD	Complex Analysis. Geometric Function Theory
3	Dr. Ehtsham Azhar	Assistant Professor	PhD	Computational Fluid Dynamics.
4	Dr. Sadia Medhit	Lecturer	PhD	Cryptography.

The faculty currently consists of two Associate Professor, one Assistant Professors and two Lecturers. However, the department is in short of teaching faculty as there are two PhD for teaching major subjects.

Standard 6-2: The interests and qualifications of all faculty members must be sufficient to teach all courses, plan, modify and update courses and curricula.

As mentioned earlier, there is limited number of the faculty members for this program. The program is initiated in 2022. As it has been mentioned earlier that department has received highly positive response from the public within a limited number of time, so highly qualified faculty is required so the program productivity can be enhanced by introducing the PhD programs as per HEC rules. Professional training and availability of adequate research and academic facilities are required to the faculty members.

Standard 6-3: 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

Meanwhile, four regular faculty members for Mathematics are working in the program. The program activities are being carried out with the help of visiting faculty. As mentioned earlier, any faculty member if interested in any research or education improving program is

fully and immediately supported. There is healthy working environment for the faculty members. There is complete cooperation amongst them. Teachers of the program are actively engaged in imparting quality education. So far, the faculty members of the Mathematics program have cooperated in every step taken by the university to obtain the program objectives. They are always interested in improving the quality of education.

CRITERION 7: INSTITUTIONAL FACILITIES

The university has one central library which is facilitated with books and literature about the subject.

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

The subject of mathematics has wide applications in many field of sciences such as in fields of statistics, economics, agriculture and computer science, so the subject needs a constant update of knowledge. To be updated in the different theories and methodologies, the facility of internet is an essential component.

The faculty members of the mathematics department are always prepared to be innovative and practical oriented in their subject. They should have access to new and authentic software which are helpful in studying theories and concepts of subject e.g., MATLAB, Maple and Mathematica and R language etc.

Weaknesses:

- Recommended books of the Mathematics program are not available to the students in the main library. There should be mini Library in the department.
- Allocation of separate budget is required for books and other stationery.

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

- The library has a computer lab consisting of minimum number of personal computers. The lab has been facilitated with the internet facility. There is the need of separate library for the program.
- The access to various web sites of prestigious research journals and publications e.g. Jstor, and science direct provided by HEC is also available in the lab. Electronic library books and journals are available for learning purpose via Higher Education

Commission.

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

- There is one class room and one room is being shared up with program. As mentioned earlier, there is one computer lab is equipped with 5 personal computers.
- The faculty offices are also not sufficient to accomplish the requirements of all the faculty members.

Weaknesses:

- Insufficient classrooms available because of which we have to use the computer lab instead of classroom.
- Classrooms must be adequately equipped and offices must be adequate to enable faculty to carry out their responsibility. There should be proper facility of multimedia in each classroom.

CRITERION 8: INSTITUTIONAL SUPPORT

Although the institute is fully supportive and cooperative but the financial resources in this respect are insufficient. Let us study the standards to meet this aspect.

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 faculty and scholars

- The university is almost trying to provide every facility available to the faculty individuals to improve their qualifications and upsurge their careers.
- The environment is extremely friendly and comfortable. All the faculty members move with complete harmony and are very accommodative with each other. The courses are assigned with the total consent of the teacher.

Weaknesses:

- There is a need of PhD qualified teachers and scholars.
- Insufficient secretarial support, technical staff and office equipment.
- There should be separate computer assistant for the program.
- The number of faculty members is insufficient for the program.

- Separate class rooms are required. Due to unavailability of class rooms, classes are taken in the labs.

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

M.Phil program first batch is completed in Fall-2024.

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

There is the combined budget for department of Mathematics and Statistics for the year 2022-24 is almost 50,000. There is no separate budget for this program. The said budget includes the financial resources for stationary, the maintenance of the computer laboratory and purchase of consumable items and books

SUMMARY

The Self-Assessment report of M.Phil Mathematics from the year 2022-24 gives an overview of the program objectives and also highlights the shortcomings of the program that need to be overcome in order to run the program effectively. The initiation of the said program was in 2022 and since then this discipline has become an active program in PMAS Arid Agriculture University. The said program got the positive and fruitful progress from the public within a very short period of time. In this SAR, the program mission and objectives are prescribed and outcome is assessed on the basis of said objectives. Program outcomes are to be more satisfactory within a very short period of time. The outcome of the said program brought remarkable progress among the students; most of them got good jobs in the different organizations. Besides, highly administrative qualities and good communication skills, self-confidence, has also groomed their personalities and moral character. The curriculum reflects satisfactory standards as it has been designed as per HEC criteria. Different strategic plans have also been prescribed for the enhancement and development of the program. The Self-Assessment results evaluated through Performa 1 and Performa 10 are satisfactory and students are highly satisfied on quality of education and on teaching methods of the faculty. They have shown the positive response on teachers' punctuality and fairness of examination. They also highlighted the problem of restricted no of classroom, deficiency of personal computer laboratory and the said infrastructure should be up to date by using latest computers and the softwares. The program needs a separate representation as per HEC criteria and highly qualified faculty is required for further initiation of PhD program. Presently there are only four faculty members for teaching the major subjects of the said discipline and this thing needs to be improved. The faculty member needs motivation and funds for the latest research. However, the faculty members are satisfied from their jobs but their efficiency has been decreased due to a major workload problem. According to employer survey Performa, the said program has produced good mathematician as most of students got good jobs and admitted in PhD program in different universities. The institutional facilities are measured by criteria at the department needs the mini library, class rooms and faculty offices and all these shortcomings are highlighted in this SAR. The financial resources are measured by criteria 8, the program should have a separate budget for the further enhancement and development of the program. If the said problems have been resolved, then this program can bring a fruitful result for the betterment of university.

FACULTY RESUME

Name:	Dr. Muhammad Jamal
Personal:	Department of Mathematics, Pir Mehr Ali ShahArid Agriculture University, Rawalpindi, Pakistan. jamal@uaar.edu.pk Contact: +92-51-9292121
Experience:	21 years
Honors and Awards	Chinese Government Scholarship in PhD.
Memberships	➢ Admission Committee, Department of Mathematics. ➢ Quality Enhancement Cell (QEC) team member, Department of Mathematics.
Graduate Students Postdocs Undergraduate Students Honor Students	M.Phil. Supervision =20 students
Service Activity	Teaching, Research
Brief Statement of Research Interest	➢ Mathematical Modeling & Simulation. ➢ Mathematical Biology. ➢ Analytical Dynamical Systems.
Publications	40
Research Grants and Contracts	-
Other Research or Creative Accomplishments	As described above
Selected Professional Presentations	-

FACULTY RESUME

Name:	Dr. Saima Mustafa
Personal:	saimamustafa28@gmail.com 0333-5249362
Experience:	21 years
Honors and Awards	COMSATS Scholarship in PhD
Memberships	Board of Faculty (Sciences) Board of Study Department of statistics Admission Committee, Department of Statistics Comprehensive Committee, Department of statistics
Graduate Students Postdocs Undergraduate Students Honor Students	M.Phil Statistics Supervision = 29 students Co-supervision =24 .
Service Activity	Teaching
Brief Statement of Research Interest	➢ Geometric Function Theory ➢ Complex Analysis ➢ Optimization Theory ➢ Numerical Analysis ➢ Operations Research
Publications	30
Research Grants and Contracts	-
Other Research or Creative Accomplishments	As described above
Selected Professional Presentations	Workshops, seminars

FACULTY RESUME

Name	Dr. Ehtsham Azhar
Personal	Assistant Professor Department of Mathematics PMAS-Arid Agriculture University, Rawalpindi - Pakistan Mobile: +92-345-5379033
Experience	Assistant Professor March 2019 to date Department of Mathematics PMAS-Arid Agriculture University, Rawalpindi - Pakistan Lecturer July 2012 to February 2019 University Institute of Information Technology PMAS-Arid Agri. University (AAUR) – Rawalpindi - Pakistan
Honor and Awards	HEC Approved Supervisor
Memberships	
Brief Statement of Research Interest	Artificial Neural Network, Computational Fluid Dynamics, Numerical Analysis
Publications	55

FACULTY RESUME

Name	Dr. Sadia Medhit
Personal	Lecturer Department of Mathematics PMAS-Arid Agriculture University, Rawalpindi - Pakistan Mobile: +92-331-5108397
Experience	Lecturer March 2019 to date Department of Mathematics PMAS-Arid Agriculture University, Rawalpindi - Pakistan
Honor and Awards	HEC Approved Supervisor
Memberships	
Brief Statement of Research Interest	Artificial Neural Network, Cryptography, Fuzzy Set Theory
Publications	24