# Course Specification

(Postgraduate)

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|---|
| Course Title: **Research Project** |
| Course Code: **MATH695** |
| Program: **Master Program in Mathematics** |
| Department: **Mathematics** |
| College: **Science** |
| Institution: **University of Tabuk** |
| Version: **2** |
| Last Revision Date:**1/12/1443 H** |

## Table of Contents

# A. General information about the course:

| Course Identification | |
|---|---|
| **1. Credit hours:** | 3 HOUR |

**2. Course type**

| | | | | | |
|---|---|---|---|---|---|
| a. | University ☐ | College ☐ | Department☒ | Track☐ | Others☐ |
| b. | Required ☒ | Elective☐ | | | |

**3. Level/year at which this course is offered:**
**level 4**

**4. Course general Description**

The research project is used to assess the students independent thinking skills and ability to understand, write, and present formal mathematics, as well as to develop a sense of individual research and of mathematical creativity. The projects are evaluated according to depth of mathematical content, clarity of exposition, effort.

The main steps for the completion of the research project are:

1. **Choosing the Project:** At the beginning of year, the students should have a list with proposed topics to choose from.
2. **Weekly meetings with the supervisor:** The student and her/his supervisor should schedule a meeting time, preferably once per week.
3. **Project Presentation:** During the second half of the semester it is preferable that each student present her/his work as part of a mathematics seminar. All senior students are required to attend the presentations of their colleagues.
4. **Written Project:** By the end of the academic year each student has to submit three copies to the course coordinator by the required date before the final defense.
5. **Defense :** By the required date students should present themselves for the defense in front of a committee and be able to answer questions asked by the committee members.

**5. Pre-requirements for this course (if any): None**

**6. Co- requirements for this course (if any): None**

**7. Course Main Objective(s)**

1. Gain and demonstrate advanced knowledge and skills in the specific area of mathematics.
2. Describe and present a scientific topic using an organized scientific methods and defined in front of a number of audience.
3. Analyzed critically the obtained results training the student to come up with objective conclusions.
4. 4. Work independently on the research under the supervision of academic member of staff and train the student to be self-dependentin collecting the required data through personal efforts.

## 1. Teaching mode(mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|---|---|---|---|
| 1. | Traditional classroom | 45 | 100% |
| 2. | E-learning | | |
| 3. | Hybrid<br>• Traditional classroom<br>• E-learning | | |
| 4. | Distance learning | | |

## 2. Contact Hours (based on the academic semester)

| No | Activity | Contact Hours |
|---|---|---|
| 1. | Lectures | 3 H /week |
| 2. | Laboratory/Studio | |
| 3. | Field | |
| 4. | Tutorial | |
| 5. | Others (specify) | |
| | Total | 45 |

# B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

| Code | Course Learning Outcomes | Code of CLOs aligned with program | Teaching Strategies | Assessment Methods |
|---|---|---|---|---|
| 1.0 | Knowledge and understanding<br>The students will be able to: | | | |
| 1.1 | Demonstrate deep knowledge to the research problem. | K1 | Weekly briefing with supervisor | Coursework and defense |
| 1.2 | Keep up with the recent and advancements researches in specific area of mathematics | K2 | | |
| 1.3 | Enhance advanced knowledge and understanding of research methodology. | K3 | | |
| 2.0 | Skills<br>The students will be able to: | | | |
| 2.1 | Apply deeply and advanced mathematical concepts in conducting scientific research in specified mathematical field. | S1 | Weekly briefing with supervisor | Coursework and defense |
| 2.2 | Analyze the research problem and its results using advanced mathematical methods related to the problem. | S2 | | |

| Code | Course Learning Outcomes | Code of CLOs aligned with program | Teaching Strategies | Assessment Methods |
|---|---|---|---|---|
| 2.3 | Use of creative critical thinking in analyzing the research problem in a scientific way. | S3 | | |
| 2.4 | Define and Communicate the purpose of conducting the research and study using written and oral presentations. | S4 | | |
| 3.0 | Values, autonomy, and responsibility<br>The students will be able to: | | | |
| 3.1 | Perform research work ethically and independently. | V1 | Weekly briefing with supervisor | Coursework and defense |
| 3.2 | Demonstrate responsibility during work individually or in group research. | V2 | | |

## C. Course Content

| No | List of Topics | Contact Hours |
|---|---|---|
| 1 | Introduction to research work and offering various topics for the students to choose from. | 3 |
| 2 | Putting a plan for the project. | 3 |
| 3 | Putting a plan for the project. | 3 |
| 4 | Guiding the students on summing up the required references and researches with the aid of the library and online websites | 3 |
| 5 | Guiding the students on summing up the required references and researches with the aid of the library and online websites | 3 |
| 6 | Guiding the students of the structure of a research work. | 3 |
| 7 | Practicing writing introductions to a research work | 3 |
| 8 | Practicing writing introductions to a research work | 3 |
| 9 | Discussing the summed up data. | 3 |
| 10 | Solving the main problem of the research work. | 3 |
| 11 | Solving the main problem of the research work. | 3 |
| 12 | Solving the main problem of the research work. | 3 |
| 13 | Solving the main problem of the research work. | 3 |
| 14 | Writing the research work and revising it to put it in its final form. | 3 |
| 15 | Writing the research work and revising it to put it in its final form. | 3 |
| Total | | 45 |

## D. Students Assessment Activities

| No | Assessment Activities * | Assessment timing | Percentage of Total Assessment Score |
|---|---|---|---|
| 1. | Course work (by supervisor) | During semester | 40% |
| 2. | Oral defense presentation and discussion. (by supervisor) | End of semester | 20% |
| 3. | Oral defense presentation and discussion (by 1st Referee ) | End of semester | 20% |
| 4. | Oral defense presentation and discussion (by 2nd Referee) | End of semester | 20% |
| Total | | | 100% |

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

## E. Learning Resources and Facilities

### 1. References and Learning Resources

| | |
|---|---|
| Essential References | 1. Roberts, C., Hyatt, L .The Dissertation Journey: A Practical and Comprehensive Guide to Planning, Writing, and Defending Your Dissertation, SAGE Publications (2018).<br>2. Nicholas J. Higham. Handbook of Writing for the Mathematical Sciences, SIAM, Third edition, 2020. |
| Supportive References | Rudestam, K. E. & Newton, R. R. (1992). Surviving your dissertation: A Comprehensive guide to content and process. Newbury Park, CA: Sage Publications |
| Electronic Materials | Saudi digital library |
| Other Learning Materials | None |

### 2. Required Facilities and equipment

| Items | Resources |
|---|---|
| facilities<br>(Classrooms, laboratories, exhibition rooms, simulation rooms, etc.) | 1. Lecture Room with capacity of 30 students and equipped with White Board, Overhead projector.<br>2. Library.<br>3. Computer lab |
| Technology equipment<br>(projector, smart board, software) | None |
| Other equipment<br>(depending on the nature of the specialty) | None |

## F. Assessment of Course Quality

| Assessment Areas/Issues | Assessor | Assessment Methods |
|---|---|---|

| Assessment Areas/Issues | Assessor | Assessment Methods |
|---|---|---|
| Effectiveness of teaching | Students | Direct and Indirect |
| Effectiveness of students assessment | Teacher | Direct |
| Quality of learning resources | Students | Indirect |
| The extent to which CLOs have been achieved | Teacher, Quality Committee | Direct and Indirect |

**Assessor** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
**Assessment Methods**(Direct, Indirect)

## G. Specification Approval Data

| | |
|---|---|
| **Council / Committee** | **Approval by the Department Council** |
| **Reference No.** | DEPARTMENT COUNCIL NO (26) |
| **Date** | **11/9/1444 H** |