



## *Course Specifications for*

# **MAT 699** **Research Project**

## *Master of Science in Mathematics*

*Department of Mathematics & Statistics*

*College of Science*

**Al Imam Mohammad Ibn Saud Islamic University**



<p><i>Institution:</i>  <b>Al-Imam Mohammad Ibn Saud Islamic University</b></p> <p><i>Date of Report</i>  <b>September 10, 2017 – Dhu al-Hijjah 19, 1438</b></p>
<p><i>College/Department:</i>  <b>College of Science / Department of Mathematics and Statistics</b></p>

## A. Course Identification and General Information

<p>1. <i>Course title and code:</i>  <b>Research Project - MAT 699</b></p>																				
<p>2. <i>Credit hours</i>  <b>4 (3 Lectures, 0 Lab, 1 Tutorial)</b></p>																				
<p>3. <i>Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs)</i>  <b>Master of Science in Mathematics</b></p>																				
<p>4. <i>Name of faculty member responsible for the course</i>  <b>Dr Ismail DJEBALI</b></p>																				
<p>5. <i>Level/year at which this course is offered:</i>  <b>Level 3 / Year 2</b></p>																				
<p>6. <i>Pre-requisites for this course (if any):</i>  <b>Research projects will be started in the last semester of the program study (2nd year – 4th semester).</b></p>																				
<p>7. <i>Co-requisites for this course (if any):</i>  <b>None</b></p>																				
<p>8. <i>Location if not on main campus</i>  <b>Main campus for the male section and King Abdullah city for the female section</b></p>																				
<p>9. <i>Mode of Instruction (mark all that apply)</i></p> <table> <tr> <td>a. Traditional classroom</td> <td><input type="checkbox"/></td> <td>What percentage?</td> <td><input type="checkbox"/></td> </tr> <tr> <td>b. Blended (traditional and online)</td> <td><input type="checkbox"/></td> <td>What percentage?</td> <td><input type="checkbox"/></td> </tr> <tr> <td>c. e-learning</td> <td><input type="checkbox"/></td> <td>What percentage?</td> <td><input type="checkbox"/></td> </tr> <tr> <td>d. Correspondence</td> <td><input type="checkbox"/></td> <td>What percentage?</td> <td><input type="checkbox"/></td> </tr> <tr> <td>f. Other</td> <td><input type="checkbox"/></td> <td>What percentage?</td> <td><input type="checkbox"/></td> </tr> </table> <p>Comments: <b>Female students via an internal network. The student works on a problem in an area of advanced mathematics with the guidance of the supervisor.</b></p>	a. Traditional classroom	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>	b. Blended (traditional and online)	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>	c. e-learning	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>	d. Correspondence	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>	f. Other	<input type="checkbox"/>	What percentage?	<input type="checkbox"/>
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## B. Objectives

1. *What is the main purpose for this course?*

- This course enables students to carry out a sustained, guided, independent study of a topic in mathematics.
- This course is a faculty directed project that could be considered original in nature.
- Training student through research in a current field of mathematics and problem solving skills, literature searching and presentation skills.
- To develop an appropriate level of mathematical literacy as well as competency in documentation, analyses and presentation of results.

The topics and contents vary depending on the ability of the student and the courses that he has completed.

2. *Briefly describe any plans for developing and improving the course that are being implemented.* (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

- The use of computers in the teaching process especially in materials that require it.
- Creation an internal server for the material especially for which that requires it.
- Recent textbooks.

There is a Teaching/Learning Quality Assurance process for minor/major changes in the course based essentially on course reports and students evaluations feedback.

## C. Course Description

*Course Description:*

This course allows students to undertake a research project on a topic of interest. It gives the students an opportunity to perform a subject within the field of mathematics under supervision according to an individual study plan and independence thinking. Also, document and summarize results by writing a research report and present the results of the project.

*Course Regulations:*

1. According to the study plan of the master in Mathematics, MAT699 is a research project to be taken by a student during Semester 4.
2. However the student should complete successfully the first three semesters before he is allowed to register in MAT699.
3. Student's research project is supervised by a faculty member; this task accounts for 4 hours weekly of supervision.
4. The student completes his project by providing a written report and by making an oral presentation which occurs during the final exams period.



5. The graduate committee proceeds with research project preparation by the middle of Semester 3. Form 1 is sent to faculty members to fill in and suggested proposals are collected.

6. The graduate committee then invites students to select a research project consistent with the scientific track (Form 2). Priority will be given to students with higher grades. Research projects are distributed to students two weeks prior to Semester 3 final exams.

7. Once Semester 3 final grades are released, the student and his supervisor fill in Form 3 for official assignment.

8. At the midterm, the supervisor writes a report about the progress of the student project (Form 4).

9. As soon as the research project draws to a close, the supervisor prepares for a report according to the written evaluation form (Form 6), attributes a mark out of 40, and suggests two faculty members to form the examining board (Form 5). Furthermore, the supervisor checks the plagiarism level of the project. A maximum of 30% is tolerated. Otherwise, the student must make modifications in his project to fulfill this condition.

9. The graduate committee suggests a defense committee and proposes a date for project presentation. A form is filled in and then approved by the head of the department of Mathematics & Statistics.

10. Every member of the committee should make a written evaluation of the project (Form 6).

11. The oral presentation takes 60 minutes and consists of 40 minutes for project presentation and 20 minutes for questions by the examiners. The student is evaluated according to Form 7.

12. The student may be requested to make modifications and improvements in his manuscript. Three copies of the final version together with a CD are handed over to the graduate committee.

**List of Forms:**

**Form 1: MSc research project proposal**

**Form 2: Student choices for a research project**

**Form 3: Project formalization**

**Form 4: Supervisor midterm report**

**Form 5: Supervisor final report**

**Form 6: Written evaluation**

**Form 7: Oral evaluation**



<i>1. Topics to be Covered</i>						
<i>Depends on the List of Topics</i>					<i>No. of Weeks</i>	<i>Contact Hours</i>
<i>2. Course components (total contact hours and credits per semester):</i>						
	<i>Lecture</i>	<i>Tutorial</i>	<i>Laboratory</i>	<i>Practical</i>	<i>Other:</i>	<i>Total</i>
<i>Contact Hours</i>						<b>4</b>
<i>Credit</i>						<b>4</b>
<i>3. Additional private study/learning hours expected for students per week.</i>						
					<b>8 hours minimum</b>	
<i>4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy</i>						



	<i>NQF Learning Domains And Course Learning Outcomes</i>	<i>Course Teaching Strategies</i>	<i>Course Assessment Methods</i>
<b>1.0</b>	<b>Knowledge</b>		
1.1	To apply knowledge and skills to a research problem.	Independent study under the guidance of the research supervisor	Written report
1.2	To acquire a skill set relevant to a specific research project.	Independent study under the guidance of the research supervisor	Written report
1.3	To provide in-depth knowledge of currently active research areas in Mathematics.	Independent study under the guidance of the research supervisor	Written report
<b>2.0</b>	<b>Cognitive Skills</b>		
2.1	To acquire experience in searching and assessing current literature.	Independent study under the guidance of the research supervisor	Written report
2.2	To analyze arguments in relation to their premises, assumptions, contexts, and conclusions.	Independent study under the guidance of the research supervisor	Written report
<b>3.0</b>	<b>Interpersonal Skills &amp; Responsibility</b>		
3.1	To construct logical and reasonable arguments that include anticipation of counter-arguments.	Independent study under the guidance of the research supervisor	1. Written report 2. Oral presentation
3.2	To demonstrate creative and innovative approaches to his (her) research project subject.	Independent study under the guidance of the research supervisor	1. Written report 2. Oral presentation
3.3	To be able to write a research paper in the appropriate scientific style.	Independent study under the guidance of the research supervisor	Written report



	<i>NQF Learning Domains And Course Learning Outcomes</i>	<i>Course Teaching Strategies</i>	<i>Course Assessment Methods</i>
<b>4.0</b>	<b>Communication, Information Technology, Numerical</b>		
4.1	<b>To communicate knowledge and skills gained in conducting a research project.</b>	<b>Independent study under the guidance of the research supervisor</b>	<b>1. Written report 2. Oral presentation</b>
4.2	<b>To use numerical techniques to achieve desired outcomes.</b>	<b>Independent study under the guidance of the research supervisor</b>	<b>1. Written report 2. Oral presentation</b>
4.3	<b>To perform presentation using appropriate technologies.</b>	<b>Independent study under the guidance of the research supervisor</b>	<b>1. Written report 2. Oral presentation</b>
<b>5.0</b>	<b>Psychomotor</b>		
	<b>Research project dependent</b>		



5. Map course LOs with the program LOs.

Course LOs #	Program LOs*								
	1.1	1.2	2.1	2.2	2.3	3.1	3.2	4.1	4.2
1.1	✓	✓							
1.2	✓	✓							
1.3	✓	✓							
2.1			✓	✓	✓				
2.2			✓	✓	✓				
3.1						✓			
3.2						✓			
3.3						✓			
4.1								✓	
4.2									✓
4.3								✓	✓

\* Use Program LO Code #s provided in the Program Specifications





6. *Schedule of Assessment Tasks for Students During the Semester*

	<i>Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)</i>	<i>Week Due</i>	<i>Proportion of Total Assessment</i>
1	<b>Written report in English (40-50 pages)</b>	<b>At the end of semester</b>	<b>70%</b>
2	<b>Oral exam: (presentation 20 minutes in English language)</b>	<b>At the end of semester</b>	<b>30%</b>

## D. Student Academic Counseling and Support

1. *Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)*

- **Student admitted to the master program will be assigned an academic adviser by the mathematics graduate committee (MGC) to give him/her the appropriate academic counseling and support.**
- **The lecturer for each course allocates 6 office hours per week advertised on his /her own timetable, and reserved as part of his/her teaching schedule to help the students on any academic problems/difficulties.**
- **Student is able to get individual consultation and academic advice appointment with teaching staff via e-mail or phone calls.**
- **A list of teaching staff members with their room numbers, their phone numbers and their e-mail addresses is given in the Department website.**

## E. Learning Resources

1. *List Required Textbooks*

2. *List Essential References Materials (Journals, Reports, etc.)*

3. *List Recommended Textbooks and Reference Material (Journals, Reports, etc)*

4. *List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)*

5. *Other learning material such as computer-based programs/CD, professional standards or regulations and software.*



## F. Facilities Required

*Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)*

1. *Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)*

- **Each classroom is equipped with a whiteboard and a projector.**
- **Laboratories are equipped with computers and an internet connection.**

2. *Computing resources (AV, data show, Smart Board, software, etc.)*

**The rooms are equipped with data show, Smart Board.**

3. *Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)*

**None**

## G. Course Evaluation and Improvement Processes

1. *Strategies for Obtaining Student Feedback on Effectiveness of Teaching*

**Students are asked at the end of this course to fill in an anonymous questionnaire on their assessment of the course. The forms will be analyzed, and the summary of results posted to the head of the department for evaluation.**

2. *Other Strategies for Evaluation of Teaching by the Program/Department Instructor*

**At the end of each semester the course instructor should complete a report, including a summary of student questionnaire responses appraising progress and identifying changes that need to be made if necessary.**

3. *Processes for Improvement of Teaching*

**Student evaluations and the advisor's course report will be used to decide improving parameters. Benchmarking with similar programs in other universities inside and outside the Kingdom of Saudi Arabia.**

4. *Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)*

**The written research project report and the presentation will be assessed by a dissertation committee**

5. *Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.*

**Twice annually following the Teaching\Learning Quality Assurance Process Diagram adopted by the Department Council.**



*Academic Accreditation Committee Member:* **Dr Ismail DJEBALI**

**Signature:** \_\_\_\_\_ **Date Report Completed:** **05/10/2019**

*Course Responsible:* **Dr. Mohamed HMISSI**

**Program Coordinator:** **Dr Ibrahim ALDAYAL**

**Signature:** \_\_\_\_\_ **Date Received:** **05/10/2019**