

T6. Course Specification (CS) توصيف المقرر

Institution: Najran University	Date 14-8-1439 H
College/Department : College of Arts and Sciences / Mathematical Department	

A. Course Identification and General Information

1. Course title : Calculus III and code: 221Math-3																				
2. Credit hours : Three hours																				
3. Program(s) in which the course is offered. Mathematical Department																				
4. Name of faculty member responsible for the course: Dr. Alsayed Metawea Abd-Elreheem																				
5. Level/year at which this course is offered : Fifth Level / Third Year																				
6. Pre-requisites for this course (if any) : Calculus I 101Math-3 and Calculus II 121Math-3																				
7. Co-requisites for this course (if any) : None																				
8. Location if not on main campus : 1-College of Arts and Sciences-Najran (Male and Female) 2- College of Arts and Sciences- Sharurah (Male and Female)																				
9. Mode of Instruction (mark all that apply)																				
<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 checked="" type="checkbox"/></td> <td>What percentage</td> <td><input type="text" value="100"/></td> </tr> <tr> <td>c. e-learning</td> <td><input type="checkbox"/></td> <td>What percentage</td> <td><input type="text"/></td> </tr> <tr> <td>d. Correspondence</td> <td><input type="checkbox"/></td> <td>What percentage</td> <td><input type="text"/></td> </tr> <tr> <td>f. Other</td> <td><input type="checkbox"/></td> <td>What percentage</td> <td><input type="text"/></td> </tr> </table>	a. Traditional classroom	<input type="checkbox"/>	What percentage	<input type="checkbox"/>	b. Blended (traditional and online)	<input checked="" type="checkbox"/>	What percentage	<input type="text" value="100"/>	c. e-learning	<input type="checkbox"/>	What percentage	<input type="text"/>	d. Correspondence	<input type="checkbox"/>	What percentage	<input type="text"/>	f. Other	<input type="checkbox"/>	What percentage	<input type="text"/>
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f. Other	<input type="checkbox"/>	What percentage	<input type="text"/>																	
Comments :																				

B. Objectives الأهداف

- What is the main purpose for this course ?

Upon completion of this course, the student should be able to do the following:

- Convergence and divergence of infinite series
- Convert from rectangular to cylindrical to spherical coordinates.
- Differentiate and integrate vector-valued functions.
- Find a partial derivatives, total differentials, directional derivatives, gradients, tangent planes, normal lines, and extrema of functions, using the second derivative test and Lagrange multipliers.
- Apply the chain rule to functions of several variables.
- Use Multiple integrals to find volume, center of mass, surface area.
- Evaluate line integrals, with and without Green's theorem, and with Stokes theorem.

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)

- Update the contents periodically.
- Using new references.
- Change in contents as a result of new according to the modern orientations.

C. Course Description (Note: General description in the form used in the Bulletin or handbook should be attached)

Course Description :

This Course will Cover :

Convergence and divergence of infinite series.

Partial derivatives, total differentials, directional derivatives, gradients, tangent planes, normal lines, and extrema of functions, using the second derivative test and Lagrange multipliers.

Multiple integrals to find volume, center of mass, surface area.

Line integrals in rectangular, cylindrical and spherical coordinates, with applications.

Green's theorem, and Stokes theorem.

1. Topics to be Covered:

List of Topics	No. of Weeks	Contact Hours
<ul style="list-style-type: none"> Infinite Sequences and Infinite series 	2	6
<ul style="list-style-type: none"> Convergence and divergence of infinite series Integral test Ratio test Root test Comparison test. Conditional convergence and absolute convergence. Alternating series test. Power Series Taylor and Maclaurin series 	3	9
<ul style="list-style-type: none"> Vector valued functions, their limits, continuity, derivatives and integrals. 	2	6
Partial derivatives <ul style="list-style-type: none"> Chain Rule Directional derivatives Tangent planes and normal lines to equations Extrema of Functions of Several Variables 	3	9
<ul style="list-style-type: none"> Double integral and its applications to area, volume Moments and center of mass Double integrals in polar coordinates. Triple integral in rectangular, cylindrical and spherical coordinates and applications to volume, the moment and center of mass. Vector fields Line integrals and Surface integrals. 	4	12
<ul style="list-style-type: none"> Green's theorem divergence theorem. Stoke's theorem 	1	3

1.Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory or studio	Practical	Other:	Total
Contact Hours	45					45
Credit	3					3

3-Additional private study/learning hours expected for students per week	4
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy.

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table)

Second, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes.

Third, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain).

Code	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	define the basic concepts about partial differential .	Method of discussion	Exams, homework, and quizzes.
1.2	describe appropriate information for applying partial differential and double integral in various scientific fields .	Lectures and Tutorials	Collaborative learning and Team work
1.3	recognize how to choose the appropriate way to find the partial differential and double integral	problem solving methods	Exams, homework, and quizzes.
1.4	recognize the various ways to solve the partial differential and double integral	Class motivations and discussions	Exams, homework, and quizzes.

Code	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
2.0	Cognitive Skills		
2.1	form tree for partial differential and plot the double integral	Discussions	Training reports
2.2	create the solutions of the partial differential and double integral	Examples and problems	Quizzes
2.3	build a mathematical model of a natural phenomenon.	Oral presentation	Summary reports
2.4	distinguish between the kinds of partial differentials	Discussions through the lecture.	Quizzes
3.0	Interpersonal Skills & Responsibility		
3.1	take responsibility in learning through a variety of tasks and activities assigned to him	Discussion	Homework assignments
3.2	work in teamwork with peers in an atmosphere of cordiality and understanding with regard to semi-real situations	Cooperative learning method.	Oral presentation
4.0	Communication, Information Technology, Numerical		
4.1	use the numerical methods for evaluating the partial differential and double integral	Laboratory exercises	Using computers
4.2	use the Internet	Laboratory exercises	Using computers
5.0	Psychomotor		
	Not applicable	Not applicable	Not applicable

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task (e.g. essay, test, Quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	First Exam	6	25%
2	Second Exam	12	25%
3	Final Exam	16	50%

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)

- Office hours 4hr/ week.

E. Learning Resources

1. List Required Textbooks :

Nassar Hassan Alsilmy, Calculus III, Part III 2005, Alrushd. .

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

W. Briggs and L. Cochran , Calculus for Scientists and Engineers, Pearson; 1 edition (February 19, 2012)

3. List Electronic Materials Web Sites, Facebook, Twitter, etc.
Course videos on YouTube

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

<http://www.mathmontada.net/vb/upload...1378728470.rar>

pages.towson.edu/akumchev/math275lecturenotes.pdf

<http://www.ms.uky.edu/~123/>

<http://www.mathmontada.net/vb/upload...1378730791.pdf>

<http://www.mathmontada.net/vb/upload...1378732798.pdf>

<http://www.mathmontada.net/vb/upload...1378734522.pdf>

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.):

Suitable Classroom

2. Computing resources (AV, data show, Smart Board, software, etc.):
One data show
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
<ul style="list-style-type: none"> • Distribute questionnaires to students at the end of the semester to get a special assessment for the course. • Interview a sample of students enrolled in the course to take their views. • Follow-up over the performance of the students interact with the course through attendance and tests. •
2. Other Strategies for Evaluation of Teaching by the Instructor or by the department.
<ul style="list-style-type: none"> • Presentation of the results of a sample of students on an external reviewer. • Qualitative analysis of the results of the students. • Course Report • Course portfolio
3 Processes for Improvement of Teaching
<ul style="list-style-type: none"> • Training programs and workshops for faculty members on the most important teaching methods based around the learner. • Self-assessment by Professor article. • Creating the right atmosphere for students through social programs, entertainment, and so on. • Upgrading of the relationship between professor and student to be a human relationship. • Follow the new teaching strategies.
4. Processes for Verifying Standards of Student Achievement (eg. 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)
<ul style="list-style-type: none"> • Check and correct sample of student work by faculty members are independent. • Exchange periodically to correct or sample tests with a faculty member of the same specialty in other faculties. • A special committee as determined by management college at the end of each

<p>semester.</p> <ul style="list-style-type: none"> • Course portfolio • Peer Reviewer
<p>5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <ul style="list-style-type: none"> • Comparison with similar courses in the corresponding faculties of other universities. • Assisted by specialists in the design and planning of programs and courses. • Update the sources of learning of the course to make sure to keep abreast of developments in the field. • Statistical results to assess the students' course and to benefit from its results in the improvement and development of the course. • Course portfolio • Peer Reviewer

Name of instructor : Dr. Alsayed Metawea Abd-Elreheem Metawea

Signature :alsayed metawea Date Report Completed: 14-8-1439 H

Name of field experience teaching staff: None Program coordinator : Dr.Homoud Alhaddad

Signature: Homoud Alhaddad_ Date received: 14-8-1439 H