

Planning and Quality Assurance Affairs

Form (A)

Course Specifications

General Information

Course name	Special Functions
Course number	MATH3317
Faculty	
Department	
Course type	Major Needs
Course level	3
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - to have the knowledge of the different types of special functions and orthogonal polynomials
2 - to have the ability to make new mathematical formulas

Intended Learning Outcomes

Knowledge and Understanding	* the general properties of Gamma and Beta functions * methods of studying asymptotic behaviour of functions * general properties of hypergeometric equation and its solutions * classical orthogonal polynomials
Professional Skills	* solving linear differential equations by power series * solving linear differential equations by Laplace method
General Skill	* Team work and conducting specific tasks independently

Course Contents

1 - Gamma function, Beta function, Gauss's hypergeometric functions, Generalized hypergeometric functions, Bessel functions, Legendre polynomials, Hermite polynomials, Laguarre polynomials, Chebyshev polynomials, Jacobi Polynomials.
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Teaching and Learning Methods

1 - Lectures, Discussion, Solving problems
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Students Assessment

Assessment Method	TIME	MARKS
First mid-term	Week 6	25
Second mid-term	Week 13	25
Final Exam	Week 16	50

Books and References

Essential books	E.D. Rainville, Special Functions, Chelsea Publ., 1960
	Pathan and Kazim, Special Functions, Aligarh, 2000