

رمز المادة	نوع المادة	الساعات الأسبوعية			السنة الدراسية	اسم المادة
	مساعدة	الوحدات	ع	ن	الثانية	الرياضيات ٢ / Mathematics/2
		٦	---	٣	٣٠ أسبوع	

أهداف المادة :

مساعدة الطالب على تفهم القوانين والمسائل الرياضية اللازمة لغرض حل الدوائر الكهربائية البسيطة والمعقدة

Week	Syllabus
1 st , 2 nd	Differentiation and Integration
3 rd , 4 th , 5 th	Vector Analysis Vector analysis, Vector and non-vectors, Vector components, Space vectors, Addition of vectors, Multiplication of vectors by scalar quantity, Dot product and Cross product of vectors. Green's theory, Divergence theory, Stock's theory, Vector functions in Cartesian, Cylindrical and spherical coordinates.
6 th , 7 th , 8 th	Complex Numbers Cartesian complex numbers. The Argand diagram. Addition, subtraction, Multiplication and division of complex numbers Complex equations, the polar form of a complex number. Multiplication and division in polar form. Applications. De Moivre's theorem. Roots of complex numbers. The exponential form of a complex number.
9 th , 10 th , 11 th , 12 th	Laplace Transforms Introduction, Properties of Laplace Transform Laplace Transform of Functions The Initial and Final Value Theorems Inverse Laplace transform ,Inverse Laplace transform using Partial Fraction, Solution of Differential Equations, Solution of simultaneous differential equations
13 th , 14 th , 15 th , 16 th , 17 th , 18 th , 19 th , 20 th , 21 th , 22 th , 23 th , 24 th , 25 th	Ordinary Differential Equations (ODE) Solution of first-order differential equations by separation of variables. Homogeneous first-order differential equations. Linear first-order differential equation. Second-order differential equations, Power series methods of solving ordinary differential equations. Higher order differential coefficients as series. Leibniz's theorem. Power series solution by the Leibniz–Maclaurin method and the Frobenius Method. Bessel's equation. Legendre's equation.

**26th, 27th, 28th
, 29th, 30th**

Partial Differential Equations

Partial integration. Solution of partial differential equations by direct partial integration. Some important engineering partial differential equations. Separating the variables. The wave equation. The heat conduction equation.