

Course Code	PEU5301					
Level	5					
Course Title	Ring Theory					
Credit value	3					
Core/Optional	Optional					
Prerequisites	PEU4303 (EL)					
Hourly breakdown	Theory		Practical	Independent Learning	Assessment	Total
	25*2= 50 hrs	DS hrs =4*3 = 12 hrs		25*3 = 75 hours Online learning = 11 hours	CA = 2 hrs	150 hrs
Course Aim/s.	Realize the importance of rings as central objects in algebra and to study some applications.					
PLOs addressed by course	<p>PLO1: Knowledge: Explain the fundamental, principles and broader knowledge pertaining to the chosen science disciplines offered for the degree.</p> <p>PLO3: Communication: Demonstrate the competency in communicating efficiently and effectively to present information, ideas and concepts to the scientific community as well as to the wider society.</p> <p>PLO4: Individual Work, Team Work and Leadership: Demonstrate the competency in working independently and in groups in addressing issues in multi-disciplinary environments and completing the tasks on time through collaborative learning while exhibiting leadership.</p> <p>PLO5: Creativity and Problem Solving: Identify and analyze problems using quantitative and/or qualitative approaches using scientific methodology to provide valid conclusions.</p> <p>PLO9: Lifelong Learning: Develop the capacity to foresee new trends and their impacts and continuously update knowledge and develop skills willingly to meet those future challenges.</p>					
Course Learning Outcomes (CLO)	<p>At the completion of this course student will be able to</p> <p>CLO1: Demonstrate knowledge of the basic facts on ring theory (PLO1,3,4,5)</p> <p>CLO2: Write precise and accurate mathematical definitions of objects in ring theory; (PLO1,3,4,5)</p> <p>CLO3: Use mathematical definitions to identify and construct examples and to distinguish examples from non-examples in rings(PLO1,3,4,5)</p> <p>CLO4: Validate and critically assess a mathematical proof; (PLO1,3,4,5,9)</p> <p>CLO5: Use a combination of theoretical knowledge and independent mathematical thinking to investigate questions in ring theory and to construct proofs; (PLO1,3,4,5,9)</p>					
Content (Main topics, sub topics)	Abelian groups, co-sets, Rings and Sub ring,Commutative ring,Commutative rings with 1, Units of a ring,Subring having a different 1,Zero divisors, Integral domain, Characteristic of a ring, Division ring, Field, A finite integral domain is a field, Ideals, Maximum Ideals, Prime Ideal, Product of Ideals, sum of Ideals Quotient ring, Homomorphism,Epimorphism,Monomorphism,Isomorphism, Isomorphism theorems, Local ring, Field of quotient,PID,UFD, Euclidean domains, Prime element, Irreducible element,Polynomials, If F is a field then $F[x]$ is a PID,Zeros of a polynomials,Division algorithms for $R[x]$.					
Teaching Learning methods (TL)	<ul style="list-style-type: none"> ▪ Independent learning of Self :- study Instructional Material (IL) - Online Activities(OL); Reference Work (RF) ▪ Non—Compulsory contact sessions :- Day Schools (DS) ▪ Assessments (AS) and Feedback – MCQs (MCQ);Structured Essay (SEQ); Essay Questions (ES) 					
Assessment strategy	Overall CA Mark (OCAM): 40%			Final Assessment: 60%		
	Details: Continuous Assessment1 (CAT1): -1hr Continuous Assessment2 (CAT2): -1hr OCAM = 60%of Maximum(CAT1, CAT2) + 40%of Minimum(CAT1, CAT2)			Final Evaluation -Theory: 100%-2hrs		
Recommended Readings:	<ol style="list-style-type: none"> 1. Fraleigh, J.B. (2003). <i>A First Course in Abstract Algebra (7th Edition)</i>. Pearson. 2. Herstein, I.N. (1975). <i>Topics in Algebra (2nd Edition)</i>. John Wiley & Sons, New York. 3. Dummit, D.S., Foote, R.M. (2004). <i>Abstract Algebra (3rd Edition)</i>. John Wiley & Sons, New York. 4. Anderson, M., Feil, T. (2015). <i>A First Course in Abstract Algebra (3rd Edition)</i>. Taylor and Fransis Publishers. 					

