منابع امتحانی دروس آزمون دکتری

نام درس	اساتید ممتحن	سرفصل و منابع امتحانی
انتقال جرم پیشرفته	دکتر فاتحی فر	Transport Phenomena; Bird et al., chaps: 17-22 Mass Transfer: Fundamentals and Applications; Hines, Maddox, chaps:1-5
	دکتر یگانی	Transport Phenomena; Bird et al., chaps: 17-24 Fundamentals of momentum, heat and mass transfer; Welty et al., chaps: 24-31 Transport Phenomena in biological systems; Truskey et al., chaps: 6, 7
انتقال حرارت پیشرفته	دکتر شفیعی	مقدمه ای بر انتقال حرارت: اینکروپرا- فصول ۱ تا ۵ و ۱۱
	دکتر علیزاده	Heat Convection, Latif M. Jiji, 2ⁿᵈ ed., chaps: 1-7 &11
مکانیک سیالات پیشرفته	دکتر علیزاده	Introduction to the Continuum Fluid, flow characteristics, Understanding the role of the material derivative in transforming between Lagrangian and Eulerian description Understanding the usefulness of the Reynolds Transport Theorem (RTT). Basic Equation of fluid mechanics, Stream functions in three different coordinates, Continuity, Energy and Bernoulli equations. Basic principles of momentum balance, the Navier -Stokes Equations and Constitutive equations, Creeping Bidirectional Flows, Non-Newtonian fluid, Application RMW equation and role of rheology in fluid mechanic, Fluid flow in porous media. Multi-dimensional and unsteady fluid flow, Stokes equation, Fluid flow in non-circular ducts. Inviscid flow, Euler equation, Potential flow theory and vorticity, sink and sources, Vortex. Boundary layer theory Application to external flow, Summary of Boundary Layer Equations for Steady Laminar flow, Laminar Boundary Layer Flow over Semi-infinite Flat, Applications: Blasius Solution, Falkner-Skan Flow Over a Wedge and Scaling. Approximate Solutions: The integral Method, Integral formulation of the basic laws and Von Karman equation. _Textbooks:_ **Transport Phenomena**, Bird, R.B., Stewart, W.E., and Lightfoot, E.N., , John Wiley, N.Y. **Viscous Fluid Flow**, Frank M.White, Third edition **Fluid Mechanics: Fundamentals and Applications,** 2nd Edition,Yunus A. Cengel, John M. Cimbala,McGraw-Hill, 2010 **Fundamentals of Fluid Mechanics**, Bruce r. Munson ,Donald f. Young, Theodore h. Okiishi, John Wiley & Sons, Inc. **Viscous Fluid Flow** ,Tasos Papanastasiou , Georgios Georgiou , Andreas N. Alexandrou **Fundamental Mechanics of Fluids,** Iain G. Currie
	دکتر عبدلی	Fluid Mechanics (8th Edition), Frank M White Introduction to Fluid Mechanics (8th Edition), Fox and McDonald Fluid Mechanics (9th Edition), Streeter Fluid statics, Newtonian and non-Newtonian fluids, Bernoulli equation, Macroscopic friction factors, energy balance, dimensional analysis, shell balances, flow through pipeline systems, flow meters, pumps and compressors, packed and fluidized beds, elementary boundary layer theory.
ترمودینامیک پیشرفته	دکتر احمدیان	Molecular Thermodynamics of Fluid Phase Equilibria, Prausnitz et al., All Chaps (except 8&9)
	دکتر شهروزی	Introduction to Chemical Engineering Thermodynamics, Smith, Van Ness, chaps:1-6 & 10-14 Molecular Thermodynamics of Fluid Phase Equilibria, Prausnitz et al. chaps: 1-7
طراحی راکتور پیشرفته	دکتر حقیقی	
	دکتر حضرتی	Chemical Reaction Engineering; Levenspiel chaps:9-26 (except 20) Elements of Chemical Reaction Engineering; Fogler
طراحی بیوراکتور	دکتر خوش فطرت	Biochemical Engineering Fundamentals, Bailey, chaps: 7,8,9

	دکتر شکرکار	**جزوه و مطالب درسی که در اختیار دانشجویان قرار داده می‌شود.**
ریاضی عددی – تحلیلی	دکتر ذبیحی	**روشهای حل معادلات ODE و PDE** **Applied Numerical Analysis; Gerald, Wheatley** **Computation Fluid Dynamics; Hoffmann, Chiang**
	دکتر بابالو	**Partial Differential Equations for Scientists and Engineers; Farlow**