This high level textbook is written for graduate students in fusion technology, established plasma physicists and others working in the field who would benefit from a comprehensive overview. The need for an integrated and international fusion education programme is further motivated by the increasingly important role of industry in fusion research and development. Over the coming decades fusion research and development will shift from being science driven and laboratory based towards a technology driven, industry based venture. Significant innovation is and will be required in some areas, such as breeding blanket technology, plasma-facing and structural materials, superconducting magnets, microwave sources, high power beam sources, remote handling, control technology and fuelling and pumping systems. Furthermore, the transition will focus on technologies and standards associated with the nuclearization of fusion which has consequences for the required competences of the workforce. The main objective of this publication is to contribute to the consolidation and better exploitation of the achievements already reached in the past to tackle the present challenges in preparing the workforce in the different areas, with special attention to continuous professional development and life long learning. It includes chapters on fusion technology relevant to diagnostics, confinement and plasma control, as well as ones dedicated to plasma heating and current drive technology, plasma-facing components, neutronics, reactor materials, vacuum pumping and fuelling, tritium handling and remote maintenance.

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