AP Physics C: Electricity and Magnetism Syllabus Checklist · 大纲自查表

Tick one box per statement: ☐ not yet ☐ nearly ☐ confident. 每条打一个勾：尚未掌握 / 快会了 / 有把握。

8. Electric Charges, Fields, and Gauss's Law 电荷、电场与高斯定律

8.1 Electric Charge and Electric Force 电荷与电力

- ☐☐☐ Describe the electric force that results from the interactions between charged objects or systems.
- ☐☐☐ Describe the electric and gravitational forces that result from interactions between charged objects with mass.
- ☐☐☐ Describe the electric permittivity of a material or medium.

8.2 Electric Charge and the Process of Charging 电荷与带电过程

- ☐☐☐ Describe the behavior of a system using conservation of charge.

8.3 Electric Fields 电场

- ☐☐☐ Describe the electric field produced by a charged object or configuration of point charges.
- ☐☐☐ Describe the electric field generated by charged conductors or insulators.

8.4 Electric Fields of Charge Distributions 电荷分布的电场

- ☐☐☐ Describe the electric field resulting from a given charge distribution.

8.5 Electric Flux 电通量

- ☐☐☐ Describe the electric flux through an arbitrary area or geometric shape.

8.6 Gauss's Law 高斯定律

- ☐☐☐ Describe the properties of a charge distribution by applying Gauss's law.

9. Electric Potential 电势

9.1 Electric Potential Energy 电势能

- ☐☐☐ Describe the electric potential energy of a system.

9.2 Electric Potential 电势

- ☐☐☐ Describe the electric potential due to a configuration of charged objects.
- ☐☐☐ Describe the relationship between electric potential and electric field.

9.3 Conservation of Electric Energy 电能守恒

- ☐☐☐ Describe changes in a system due to a difference in electric potential between two locations.

10. Conductors and Capacitors 导体与电容器

10.1 Electrostatics with Conductors 导体的静电学

☐☐☐ Describe the charge distribution within a conductor.

10.2 Redistribution of Charge Between Conductors 导体间电荷的重新分布

☐☐☐ Describe the movement of charge and the resulting interactions when conductors physically contact each other.

10.3 Capacitors 电容器

☐☐☐ Describe the physical properties of a parallel-plate capacitor.

10.4 Dielectrics 电介质

☐☐☐ Describe how a dielectric inserted between the plates of a capacitor changes the properties of the capacitor.

11. Electric Circuits 电路

11.1 Electric Current 电流

☐☐☐ Describe the movement of electric charges through a medium.

11.2 Electric Circuits 电路

☐☐☐ Describe the behavior of a circuit.

11.3 Resistance, Resistivity, and Ohm's Law 电阻、电阻率与欧姆定律

☐☐☐ Describe the resistance of an object using physical properties of that object.
☐☐☐ Describe the electrical characteristics of elements of a circuit.

11.4 Electric Power 电功率

☐☐☐ Describe the transfer of energy into, out of, or within an electric circuit, in terms of power.

11.5 Compound Direct Current Circuits 复合直流电路

☐☐☐ Describe the equivalent resistance of multiple resistors connected in a circuit.
☐☐☐ Describe a circuit with resistive wires and a battery with internal resistance.
☐☐☐ Describe the measurement of current and potential difference in a circuit.

11.6 Kirchhoff's Loop Rule 基尔霍夫回路定则

☐☐☐ Describe a circuit or elements of a circuit by applying Kirchhoff's loop rule.

11.7 Kirchhoff's Junction Rule 基尔霍夫节点定则

☐☐☐ Describe a circuit or elements of a circuit by applying Kirchhoff's junction rule.

11.8 Resistor-Capacitor (RC) Circuits 电阻-电容（RC）电路

☐☐☐ Describe the equivalent capacitance of multiple capacitors.

☐☐☐ Describe the behavior of a circuit containing combinations of resistors and capacitors.

12. Magnetic Fields and Electromagnetism 磁场与电磁学

12.1 Magnetic Fields 磁场

☐☐☐ Describe the properties of a magnetic field.

☐☐☐ Describe the magnetic behavior of a material as a result of the configuration of magnetic dipoles in the material.

☐☐☐ Describe the magnetic permeability of a material.

12.2 Magnetism and Moving Charges 磁性与运动电荷

☐☐☐ Describe the magnetic field produced by moving charged objects.

☐☐☐ Describe the force exerted on moving charged objects by a magnetic field.

12.3 Magnetic Fields of Current-Carrying Wires and the Biot-Savart Law 载流导线的磁场与毕奥-萨伐尔定律

☐☐☐ Describe the magnetic field produced by a current-carrying wire.

☐☐☐ Describe the force exerted on current-carrying wires by a magnetic field.

12.4 Ampère's Law 安培定律

☐☐☐ Use Ampère's law to describe the magnetic field created by a moving charge carrier.

13. Electromagnetic Induction 电磁感应

13.1 Magnetic Flux 磁通量

☐☐☐ Describe the magnetic flux through an arbitrary area or geometric shape.

13.2 Electromagnetic Induction 电磁感应

☐☐☐ Describe the induced electric potential difference resulting from a change in magnetic flux.

13.3 Induced Currents and Magnetic Forces 感应电流与磁力

☐☐☐ Describe the force exerted on a conductor due to the interaction between an external magnetic field and an induced current within that conductor.

13.4 Inductance 电感

☐☐☐ Describe the physical and electrical properties of an inductor.

13.5 Circuits with Resistors and Inductors (LR Circuits) 含电阻与电感的电路（LR 电路）

☐☐☐ Describe the physical and electrical properties of a circuit containing a combination of resistors and a single inductor.

13.6 Circuits with Capacitors and Inductors (LC Circuits) 含电容与电感的电路（LC 电路）

☐☐☐ Describe the physical and electrical properties of a circuit containing a combination of capacitors and a single inductor.