Definitions

Chapter 6

Rotation speed: The speed on take-off where it is safe to rotate the airplane to the transition angle of attack, $V_R = 1.2V_{stall}$.

Lift-off speed: The speed at which the airplane leaves the ground during take-off, $V_{LO}$.

Take-off ground run: That portion of the take-off where the airplane accelerates from rest to the lift-off speed.

Take-off transition: That part of the take-off where the airplane is transitioned from the ground run to $h = 35$ ft.

Balanced field length: If a multi-engined airplane loses an engine on take-off, the pilot must decide whether to stop the airplane by braking alone or to continue the take-off on reduced thrust. The balanced field length is the length of the runway where the accel/stop distance equals the take-off distance.

Decision speed: The speed during take-off from which the airplane can be stopped by brakes alone by the end of the runway, $V_D$. Touchdown speed: The lowest speed at which an airplane can be safely put on the ground, $V_{TD} = 1.2V_{stall}$.

Landing transition: That part of the landing where the airplane transitions from $h = 50$ ft to the ground.

Landing ground run: That part of the landing where the airplane is decelerated from the touchdown speed to rest.

Glide slope: During landing, the airplane approaches the runway along a trajectory which has a flight path inclination of -3.0 deg. This angle is the glide slope.

Slat: A slat is a leading edge device which allows high energy air on the bottom of the wing to move to the top of the wing to reduce separation at high angles of attack.
Flap: A flap is a trailing edge device which allows high energy air to move from the bottom of the wing to the top of the wing and reduce separation at high angle of attack.

Take-off gross weight: The highest weight of the airplane.

Ground effect: As an airplane nears the ground, the flow over the wing cannot be deflected as far downward as it can in flight away from the ground. The result is that the lift is increased and the induced drag is decreased.

Reaction force: The force exerted by the ground on the airplane during take-off and landing.

Friction force: The force on the airplane during take-off and landing due to the friction of the wheels rotating about their axles and to brakes, if applied.

Coefficient of rolling friction: The ratio of the friction force to the reaction force, assumed constant.

Take-off ground run distance: The distance traveled by the airplane while it is on the ground during take-off. Landing ground run distance. Distance traveled by the airplane while it on the ground during landing.

Take-off transition distance: The horizontal distance traveled by the airplane as it transitions from the ground to \( h = 35 \) ft.

Glide slope: An device at the end of the runway emits a signal which is to be followed by the airplane during an instrument landing. This signal travels in a straight line which has a slope relative to the airplane, the glide slope.

Landing transition distance: The horizontal distance traveled by the airplane from \( h = 50 \) ft to the ground during landing.