



VICTORIA FLYING CLUB

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- Bookings, Questions



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# Illusions Created by Drift

- Review Circuits and Slipping
- Definition and Motivation
- **Visual Illusions – Low Flying**
- Summary and Questions
- Pre-Flight Briefing



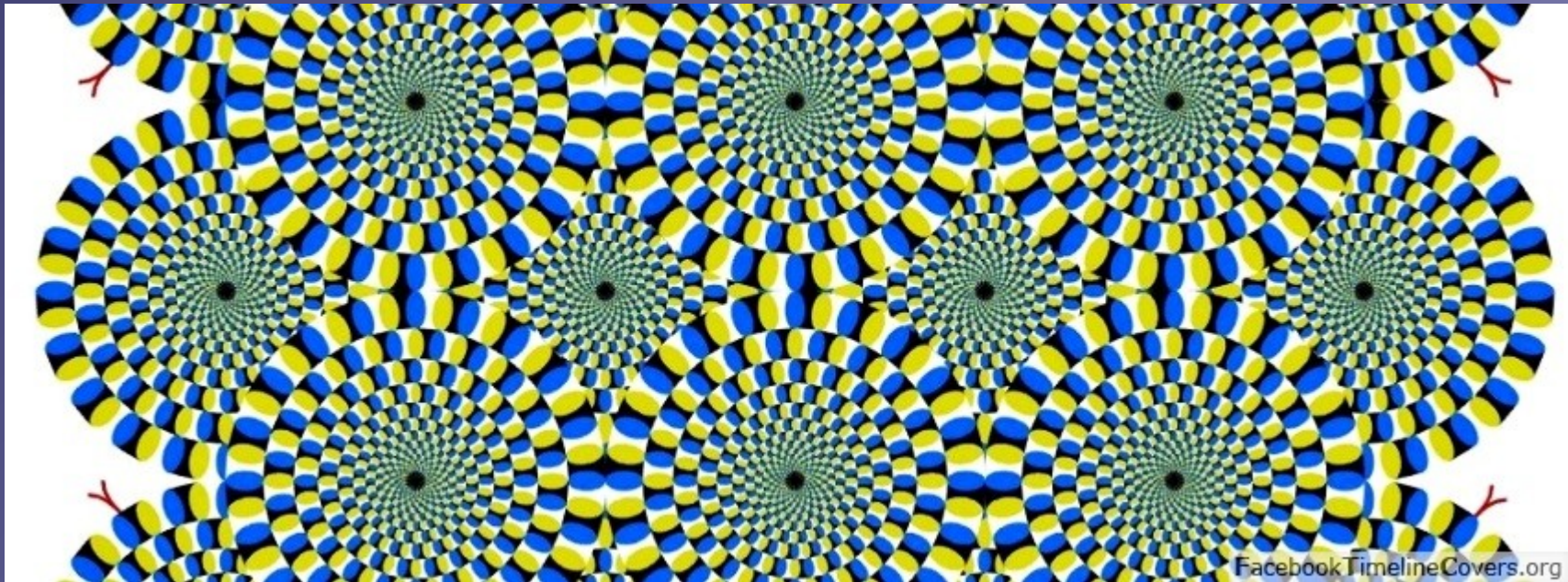
# Review Circuits and Slipping

- What are the legs of a standard aerodrome traffic circuit?
- What would be the ideal direction of the wind with respect to the circuit and why?
- What is slipping and how do we recognize it?
- Where would the nose be pointing to in a slipping and skidding turn, respectively?
- How do we correct an inadvertent slip or skid?



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# Definition and Motivation



- Visual **cues** may lead to *wrong* **assumptions** and **reactions**
- Drifting at *low* **altitudes** due to **wind** may create **visual illusions**
- Knowledge about illusions and proper reactions increases safety
- Low-level flight: **circuits**, **arrivals** and **departures**, *low* **ceilings** (*Special VFR*), **forced** or **precautionary landings**





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# Downwind Flight



- **Illusion** of being *too fast*, *incorrect* desire to decrease power
- Trust your indicated **airspeed**, **tachometer** and **engine sound**
- Avoid *inadvertent* entry to **slow flight** or **stall** (bottom of arcs)



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# Upwind Flight

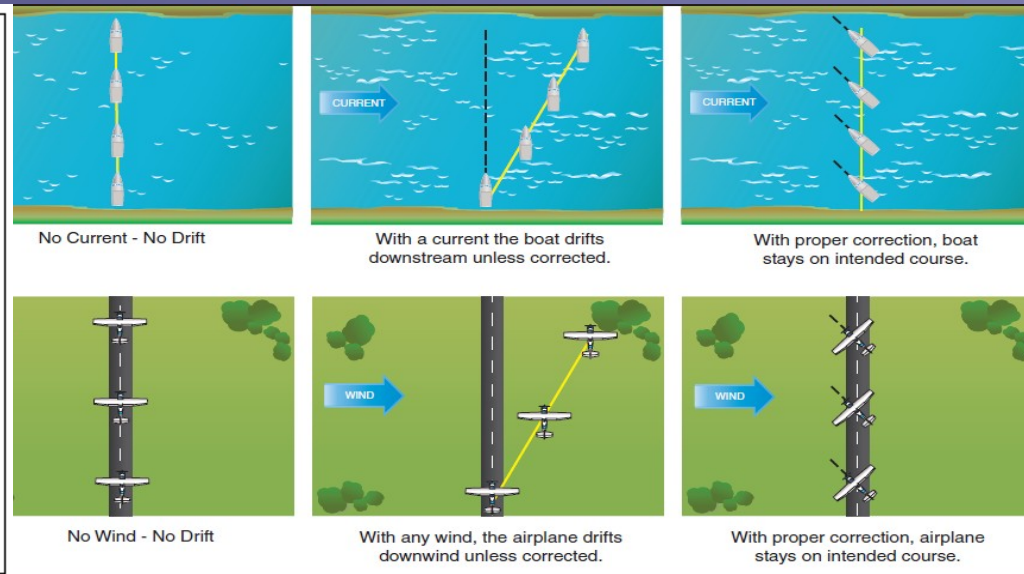
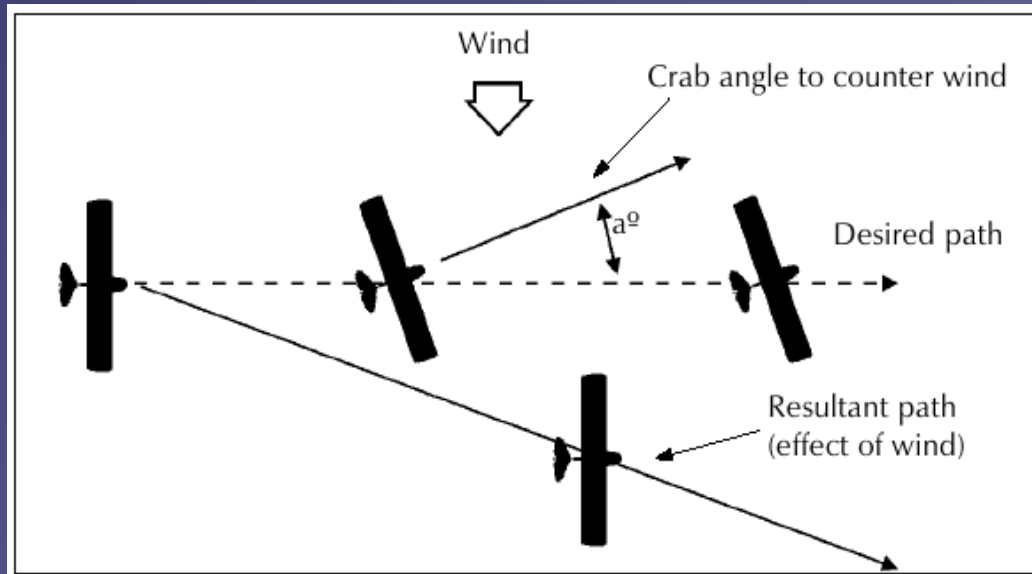


- **Illusion** of being *too slow*, *incorrect* desire to increase power
- Trust your indicated **airspeed**, **tachometer** and **engine sound**
- Avoid *exceeding* any aircraft **limitations** (red lines)



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# Crosswind Flight



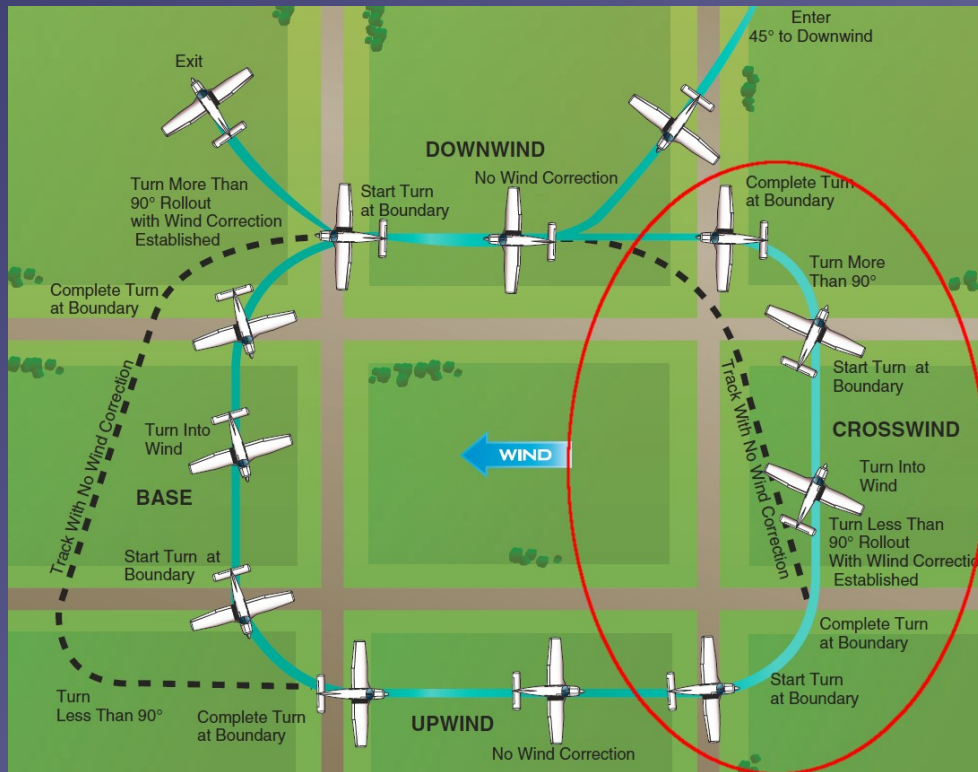
- **Illusion** of **false track**, *incorrect* desire to adjust heading
- Trust your **track** over ground, verify **landmarks** and **chart**
- Avoid *inadvertent* **drift** off-course



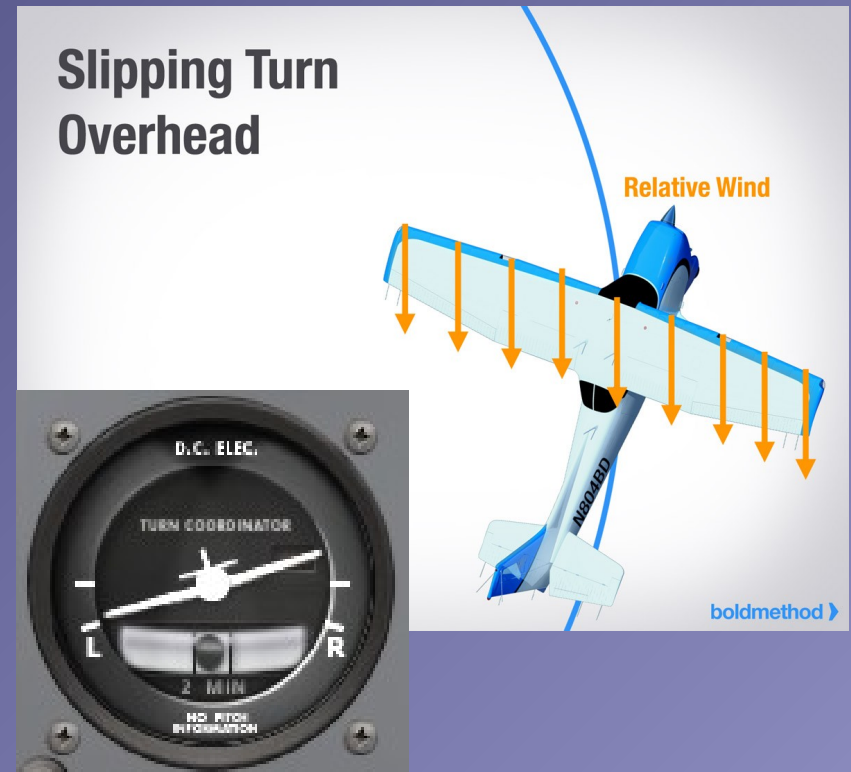


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# Turn – Upwind to Downwind



## Slipping Turn Overhead



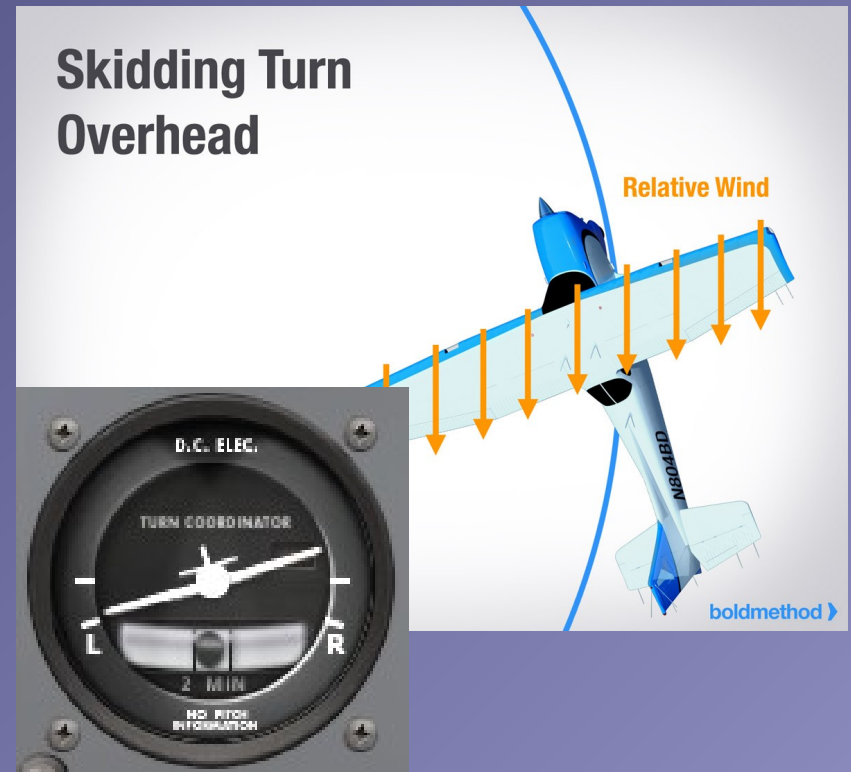
- **Illusion** of **slipping** into the turn, *incorrect* desire to apply rudder
- Trust your **turn coordinator** and resulting **track** over ground
- Avoid *inadvertent skid*





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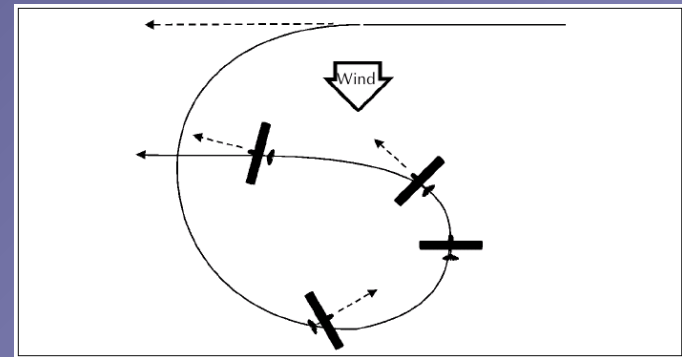
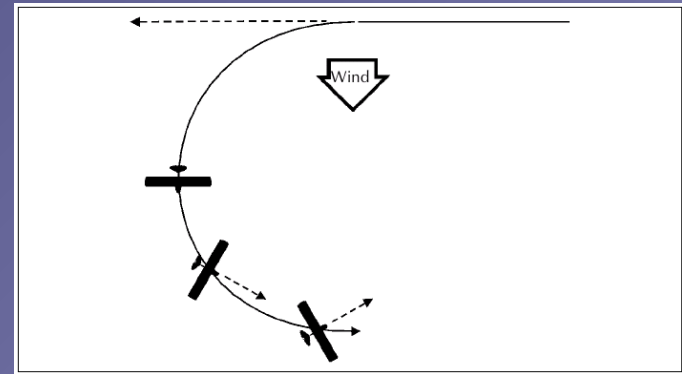
# Turn – Downwind to Upwind



- **Illusion** of **skidding** into the turn, *incorrect* desire to apply rudder
- Trust your **turn coordinator** and resulting **track** over ground
- Avoid *inadvertent* slip



# Turn – Crosswind

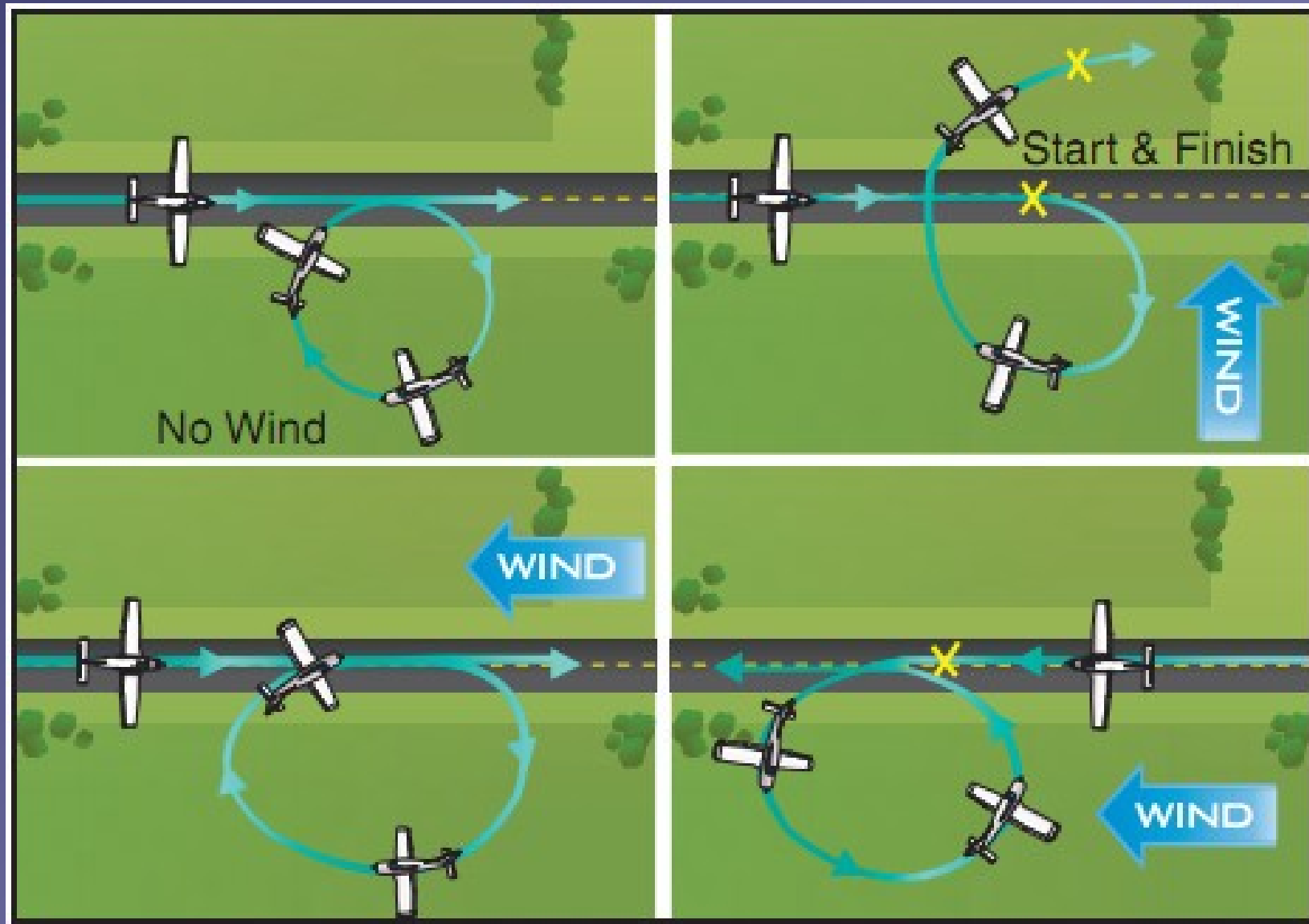


- Anticipate **drift** over ground
- Anticipate turns with **wind** and use **crabbing** on legs
- Avoid **overbanking** and **skidding** *particularly* turning to final



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# Turn – 360°







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# Forward Visibility – Speed and Flaps

*Clean*



*Flaps*



- Forward visibility decreases at *slower airspeeds*
- **Flaps** reduce the required pitch angle by increasing the wing camber and angle of attack
- **Flaps improve forward visibility** at *slower airspeeds*



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# Safety Considerations

- Maintain a *safe* **airspeed**
- Maintain a *safe* **height**
- Maintain a *good* **lookout**
- Turn *accurately* and remain **coordinated**
- Anticipate turns and compensate **drift** on legs
- Do *not* **overbank** or **skid**
- Practice exercise *only with* flight instructor



## Summary / Quiz

- In what situations and conditions do we have to be particularly aware of visual illusions caused by drift?
- When turning from or to the crosswind leg of a circuit, what illusion will most likely be experienced?
- When turning from or to the base leg of a circuit, what illusion will most likely be experienced?
- What instruments may help to prevent false reactions caused by visual illusions.





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# Pre-Flight Briefing

- Exercise
- Training Area
- Departure and Arrival Procedures
- Weather Briefing / NOTAMs
- Aircraft and Documents
- Time and Fuel Requirements
- Safety Considerations and Responsibilities



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# Additional Materials

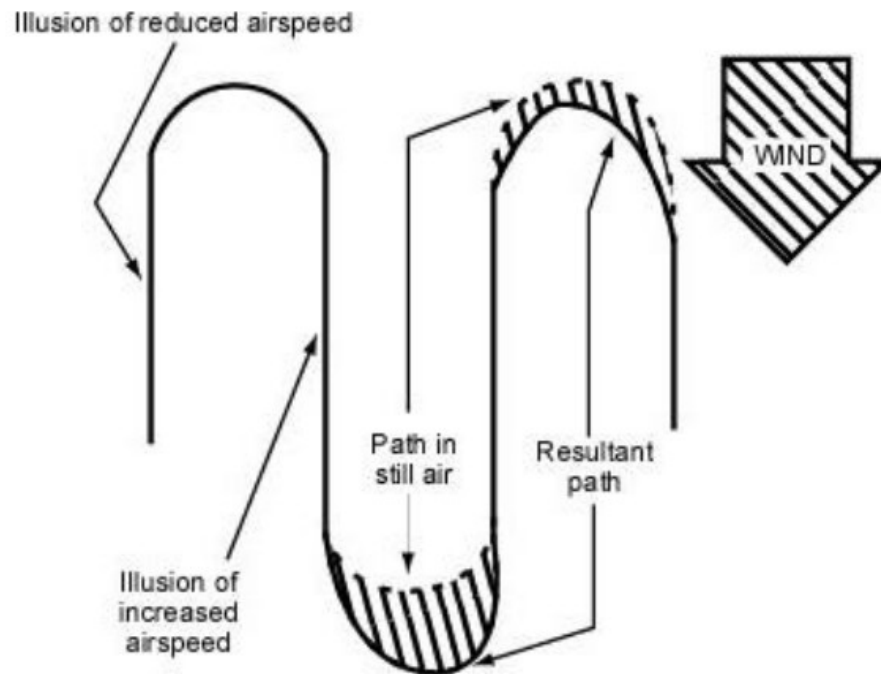
- Additional materials for Illusions created by Drift
- Flight Instructor Guide – Exercise 20, Lesson Plan 24



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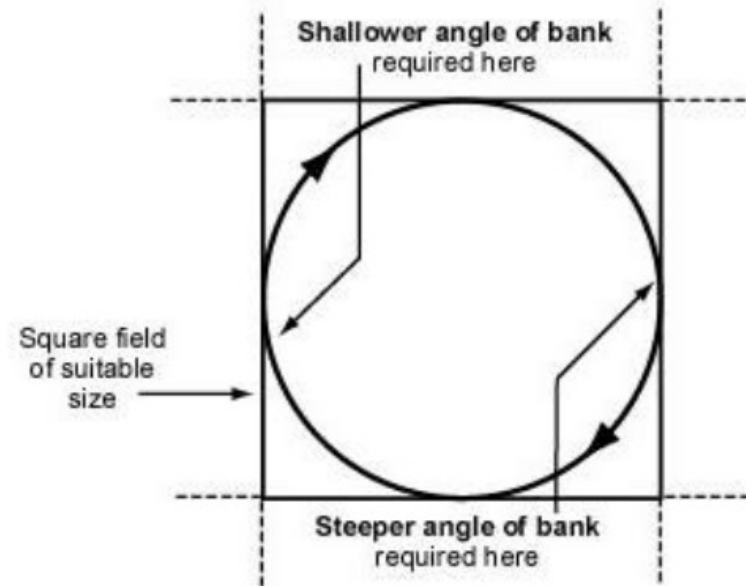
# Drift Examples

## EXAMPLES OF HOW ILLUSIONS AND EFFECT OF DRIFT IN TURNS DURING HIGH WIND CONDITIONS MAY BE DEMONSTRATED



### Speed and Drift Illusions

Purpose: To demonstrate illusions of increased and decreased airspeeds; illusions while turning; effect on flight path when constant angle of bank maintained.



### Ground reference manoeuvre

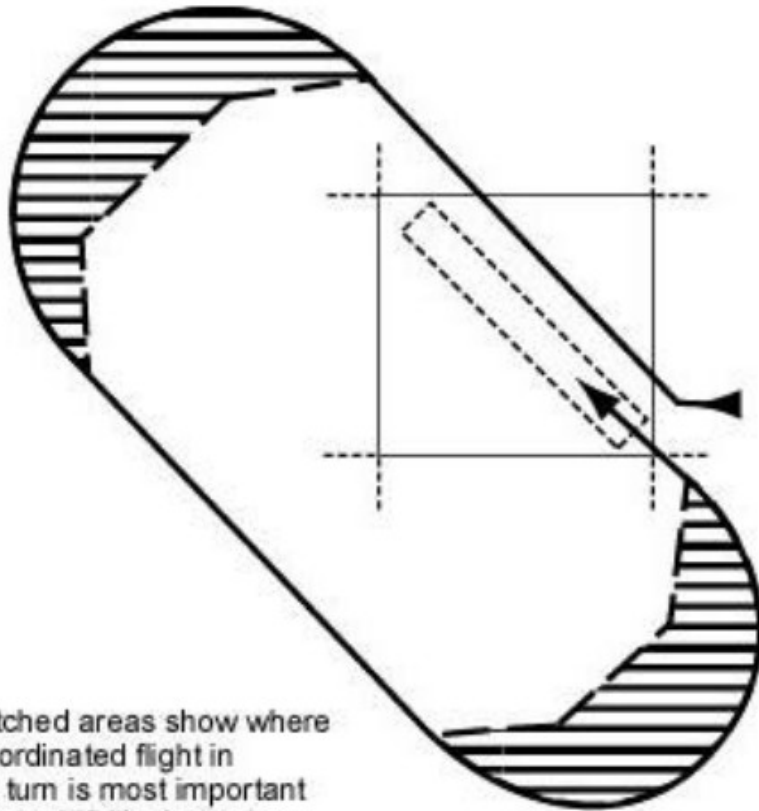
Flying a circle, making allowance for drift by varying angle of bank – constant altitude and airspeed.



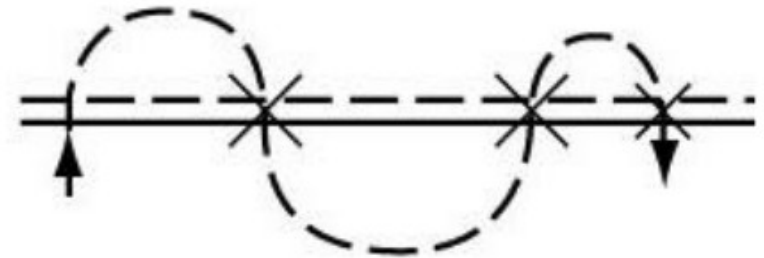


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# Drift Examples



Hatched areas show where co-ordinated flight in the turn is most important due to drift illusions at low altitude. Drift in turns must be anticipated, particularly when turning from base leg to line up for final approach.



**Ground reference manoeuvre:**  
180° turns crossing a reference line of irregularly spaced points maintaining a constant altitude and airspeed. Bank angles must be varied to obtain radius of turn necessary to cross at each successive point.

**Low level circuit:**  
Practical application of the principles learned in this exercise when low ceiling necessitates low level circuit.