

**Table 10 Fatigue training syllabus**

<b>Figure training syllabus</b>	
<p>Delivery Method:</p> <ul style="list-style-type: none"> <li>• Lecture and Facilitated Discussion</li> </ul> <p>Assessment Methodology:</p> <ul style="list-style-type: none"> <li>• Facilitator assessment of appropriate level of engagement during sessions</li> <li>• Multiple choice knowledge test.</li> </ul> <p>(Any incorrect answers to be reviewed via facilitated discussion during post-test debrief)</p> <p><b>Note:</b> Test should have sufficient questions to ensure participants have adequate understanding of all topics covered. Suggested pass rate is 80%</p>	<p>Training Materials:</p> <ul style="list-style-type: none"> <li>• Electronic Presentation Media</li> <li>• Fatigue/Ops Manual</li> <li>• White Board</li> <li>• CAO 48.1</li> <li>• CAAP 48-1</li> </ul>
<b>Fatigue Knowledge</b>	<b>Notes</b>
<p><b>1. Sleep</b></p> <p><b>Duration: 1hr (1x 50 min session with 10 min break)</b></p>	<p><b>Note:</b> Suggested session timings only</p>
<p>1.1 Sleep physiology</p> <ul style="list-style-type: none"> <li>• Achieve an understanding of the physiological need for sleep:             <ul style="list-style-type: none"> <li>– Describe the process of the build-up of 'sleep pressure' while awake</li> <li>– Develop an awareness of average and individual minimum sleep needs</li> </ul> </li> <li>• Describe the normal sleep process:             <ul style="list-style-type: none"> <li>– Achieve a basic understanding of sleep cycles and structure</li> </ul> </li> <li>• Develop an understanding of the need for quality sleep:             <ul style="list-style-type: none"> <li>– Describe the impact of fragmented sleep on sleep quality.</li> </ul> </li> </ul>	Session 1
<p>1.2 Circadian body clock</p> <ul style="list-style-type: none"> <li>• Describe circadian rhythms:             <ul style="list-style-type: none"> <li>– Develop an understanding of the biological rhythms that affect alertness and sleepiness</li> <li>– Achieve an understanding of terms such as 'Sleep gate' and 'Window of Circadian Low'</li> <li>– Achieve an understanding of the impact of daylight on setting or resetting of circadian rhythms.</li> </ul> </li> </ul>	Session 1
<p>1.3 Sleep disorders</p> <ul style="list-style-type: none"> <li>• Develop an awareness of common disorders that may impact sleep quality or quantity including:             <ul style="list-style-type: none"> <li>– Sleep apnoea</li> <li>– Insomnia.</li> </ul> </li> </ul>	Session 1
<p>1.4 Sleep debt and recovery</p> <ul style="list-style-type: none"> <li>• Develop an understanding of how a sleep debt can occur:             <ul style="list-style-type: none"> <li>– Describe link between repeated minor sleep loss and substantial sleep debt</li> </ul> </li> <li>• Describe how sleep debt must be repaid:             <ul style="list-style-type: none"> <li>– Develop an awareness of the potential need for multiple nights of recovery sleep to regain optimum performance.</li> </ul> </li> </ul>	Session 2

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<p>1.5 Shift work</p> <ul style="list-style-type: none"> <li>• Achieve an understanding of the impact of shift-work on sleep and performance:             <ul style="list-style-type: none"> <li>– Describe how shift work can impact sleep quantity and quality</li> <li>– Develop an understand of how shift work can result in working at times of circadian lows.</li> </ul> </li> </ul>	Session 2
<p>1.6 Jet lag</p> <ul style="list-style-type: none"> <li>• Achieve an understanding of how trans-meridian flight can disrupt circadian rhythms:             <ul style="list-style-type: none"> <li>– Describe how international travel can leave an individual's biological rhythms out of alignment with the local day (circadian dysrhythmia)</li> </ul> </li> <li>• Develop an awareness of the rate at which individuals adapt to time zone changes:             <ul style="list-style-type: none"> <li>– Achieve an understanding of the potential effect of jet lag on performance before/while adapting.</li> </ul> </li> </ul>	<p>Session 2</p> <p><b>Note:</b> Optional, not generally required for flying operations however if pilots travel for simulator training or personal reasons it might be of value.</p>
<p><b>2. Fatigue</b></p> <p><b>Duration: 1hr (1x 50 min sessions with 10 min break)</b></p>	<p><b>Note:</b> Suggested session timings only.</p>
<p>2.1 Understanding fatigue</p> <ul style="list-style-type: none"> <li>• Define fatigue</li> <li>• Achieve an understanding of the types of fatigue:             <ul style="list-style-type: none"> <li>– Describe transient and cumulative fatigue.</li> </ul> </li> </ul>	Session 3
<p>2.2 The causes and contributors to fatigue</p> <ul style="list-style-type: none"> <li>• Identify major factors affecting fatigue including:             <ul style="list-style-type: none"> <li>– Time of day (circadian rhythm effects)</li> <li>– Recent sleep quantity and quality</li> <li>– Time awake</li> <li>– Time on Task</li> <li>– Nature of tasks</li> <li>– Environmental conditions</li> <li>– Hydration</li> <li>– Fitness</li> <li>– Food.</li> </ul> </li> </ul>	Session 3
<p>2.3 Signs and symptoms of fatigue</p> <ul style="list-style-type: none"> <li>• Identify the range of signs and symptoms associated with fatigue including:             <ul style="list-style-type: none"> <li>– Physical</li> <li>– Mental</li> <li>– Emotional.</li> </ul> </li> </ul>	Session 3
<p>2.4 The consequences of fatigue on safety</p> <ul style="list-style-type: none"> <li>– Understanding the impact of fatigue on the effective performance of tasks.</li> </ul>	Session 4
<p>2.5 High fatigue risk situations</p> <ul style="list-style-type: none"> <li>• Be aware of the areas of human performance most affected by fatigue:             <ul style="list-style-type: none"> <li>– Develop knowledge of the type of tasks more sensitive to onset of fatigue related performance decrease.</li> </ul> </li> <li>• Develop an understanding of environments and times of the day where fatigue is more likely to occur or to develop more quickly.</li> </ul>	Session 4

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<p>2.6 The contribution of fatigue in accidents</p> <ul style="list-style-type: none"> <li>• Appreciate the contribution of fatigue to incidents and accidents in the aviation environment:             <ul style="list-style-type: none"> <li>– Review international and Australian case studies of fatigue related aviation incidents and accidents.</li> </ul> </li> </ul>	Session 4
<p>2.7 Recovery from Fatigue</p> <p>Understand sleep is the only way to recover from fatigue:</p> <ul style="list-style-type: none"> <li>• Develop an understanding of the average time needed to recover from:             <ul style="list-style-type: none"> <li>– Transient</li> <li>– Cumulative fatigue.</li> </ul> </li> </ul>	Session 4
<p><b>3. Countermeasures</b></p> <p><b>Duration: 1hr (1x 50 min sessions with 10 min break)</b></p>	<b>Note:</b> Suggested session timings only
<p>3.1 Tailoring the sleep environment</p> <ul style="list-style-type: none"> <li>• Describe setting up a bedroom or sleeping facility to aid in achieving quality sleep.</li> </ul>	Session 5
<p>3.2 Managing sleep habits</p> <ul style="list-style-type: none"> <li>• Understand how to develop habits beneficial to quality sleep.</li> </ul>	Session 5
<p>3.3 Napping</p> <ul style="list-style-type: none"> <li>• Describe the benefits of napping</li> <li>• Develop an understanding of how napping can reduce the impact of fatigue during duties</li> <li>• Describe effective napping techniques:             <ul style="list-style-type: none"> <li>– Achieve an understanding of controlling napping duration to reduce sleep inertia</li> </ul> </li> </ul>	Session 5
<p>3.4 Exercise</p> <ul style="list-style-type: none"> <li>• Describe how exercise can assist in mitigating the impact of fatigue.</li> <li>• Describe how increased fitness can improve individual resistance to the onset of fatigue.</li> </ul>	Session 5
<p>3.5 Nutrition and hydration</p> <ul style="list-style-type: none"> <li>• Describe how appropriate nutrition and hydration can aid in mitigating fatigue.</li> <li>• Develop an understanding of food types and nutrition strategies that maintain energy without causing undue drowsiness.</li> </ul>	Session 5
<p>3.6 Caffeine</p> <ul style="list-style-type: none"> <li>• Describe the effect of caffeine on alertness.</li> <li>• Develop an understanding of the benefits and limitations of the strategic use of caffeine to mitigate fatigue.</li> </ul>	Session 6
<p>3.7 Avoidance of alcohol before bed</p> <ul style="list-style-type: none"> <li>• Be aware of the impact of alcohol on the quality of sleep:             <ul style="list-style-type: none"> <li>– Develop an understanding of appropriate consumption of alcohol to limit the impact on sleep quality.</li> </ul> </li> </ul>	Session 6

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<b>3.8 Use of sleep aids</b> <ul style="list-style-type: none"> <li>Describe common prescription and over the counter sleeping pills and sedatives.</li> <li>Understand the use, limitations and risks associated with the use of sleep aids: <ul style="list-style-type: none"> <li>Develop an understanding of the health and performance effects of sleeping pills and sedatives.</li> <li>Describe the concept of clearance times associated with the use of sleep aids.</li> </ul> </li> </ul>	Session 6
<b>3.9 Avoidance of nicotine</b> <ul style="list-style-type: none"> <li>Develop awareness that nicotine is a stimulant that may impact ability to sleep.</li> </ul>	Session 6
<b>3.10 Keeping a sleep log</b> <ul style="list-style-type: none"> <li>Discuss the limitations of informally tracking sleep quantity and quality: <ul style="list-style-type: none"> <li>Develop an awareness of the potential for overestimating sleep.</li> </ul> </li> <li>Discuss the use of a structured sleep log to accurately record sleep quantity and quality: <ul style="list-style-type: none"> <li>Identify the structure and content of an appropriate log to aide recording of sleep information.</li> <li>Develop an appreciation of the benefits of a sleep log in identifying negative habits or repeated minor sleep deficits and in forming beneficial sleep habits.</li> </ul> </li> </ul>	Session 6
<b>4. Company fatigue management procedures</b> <b>Duration: 1hr (1x 50 min sessions with 10 min break)</b>	<b>Note:</b> Suggested session timings only
<b>4.1 Fatigue Risk Management Policies</b> <ul style="list-style-type: none"> <li>Develop an understanding of organisational fatigue risk management policies appropriate for the individuals' position and duties.</li> </ul>	Session 7
<b>4.2 Application of Flight and Duty Limits</b> <ul style="list-style-type: none"> <li>Ensure an understanding of the application of organisational flight and duty time limits.</li> </ul>	Session 7
<b>4.3 Fatigue Management processes and Procedures</b> <ul style="list-style-type: none"> <li>Develop a working understanding of organisational fatigue management procedures and processes (including proper use of forms).</li> </ul>	Session 7
<b>4.5 Extension policy and procedures</b> <ul style="list-style-type: none"> <li>Understand the application of organisational policy and procedure for extensions (and exceedances).</li> </ul>	Session 8
<b>4.6 Flight Crew Members' obligations</b> <ul style="list-style-type: none"> <li>Develop an awareness of the pilot's obligations regarding individual fatigue management.</li> </ul>	Session 8
<b>4.7 Rostering and recording system</b> <ul style="list-style-type: none"> <li>Understand the use of the organisation's rostering and recording system.</li> </ul>	Session 8