CHAPTER 19: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
Subject – 090 – Communications
See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus reference	**Syllabus details and associated Learning Objectives**	*Aeroplane*		*Helicopter*			*IR*
		ATPL	CPL	ATPL /IR	ATPL	CPL	
090 00 00 00	**COMMUNICATIONS**						
091 00 00 00	**VFR COMMUNICATIONS**						
091 01 00 00	**DEFINITIONS**						
091 01 01 00	**Meanings and significance of associated terms**						
LO	Stations	x	x	x	x	x	
LO	Communication methods	x	x	x	x	x	
091 01 02 00	**Air Traffic Services abbreviations**						
LO	Define commonly used Air Traffic Control abbreviations: - Flight conditions - Airspace - Services - Time - Miscellaneous	x	x	x	x	x	
091 01 03 00	**Q-code groups commonly used in RTF air-ground communications**						
LO	Define Q-code groups commonly used in RTF air to ground communications: - Pressure settings - Directions and bearings	x	x	x	x	x	
LO	State the procedure for obtaining bearing information in flight	x	x	x	x	x	
091 01 04 00	**Categories of messages**						

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Syllabus reference	**Syllabus details and associated Learning Objectives**	*Aeroplane*		*Helicopter*			*IR*
		ATPL	CPL	ATPL /IR	ATPL	CPL	
LO	List the categories of messages in order of priority	x	x	x	x	x	
LO	Identify the types of messages appropriate to each category	x	x	x	x	x	
LO	List the priority of a message (given examples of messages to compare)	x	x	x	x	x	
091 02 00 00	**GENERAL OPERATING PROCEDURES**						
091 02 01 00	**Transmission of letters**						
LO	State te phonetic alphabet used in radiotelephony	x	x	x	x	x	
LO	Identify the occasions when words should be spelt	x	x	x	x	x	
091 02 02 00	**Transmission of numbers (including level information)**						
LO	Describe the method of transmisssion of numbers: - Pronunciation - Single digits, whole hundreds and whole thousands	x	x	x	x	x	
091 02 03 00	**Transmission of time**						
LO	Describe the ways of transmitting time - Standard time reference (UTC) - Minutes, minutes and hours, when required	x	x	x	x	x	
091 02 04 00	**Transmission technique**						
LO	Explain the techniques used for making good R/T transmissions	x	x	x	x	x	
091 02 05 00	**Standard words and phrases (relevant RTF phraseology included)**	**x**	**x**	**x**	**x**	**x**	
LO	Define the meaning of standard words and phrases	x	x	x	x	x	
LO	Use correct phraseology for each phase of VFR flight	x	x	x	x	x	

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Syllabus reference	**Syllabus details and associated Learning Objectives**	*Aeroplane*		*Helicopter*			*IR*
		ATPL	CPL	ATPL /IR	ATPL	CPL	
LO	Aerodrome procedures	x	x	x	x	x	
	- Departure information						
	- Taxi instructions						
	- Aerodrome traffic and circuits						
	- Final approach and landing						
	- After landing						
	- Essential aerodrome information						
LO	VFR Departure	x	x	x	x	x	
LO	VFR Arrival	x	x	x	x	x	
091 02 06 00	**Radiotelephony call signs for aeronautical stations including use of abbreviated call signs**						
LO	Name the two parts of the call sign of an aeronautical station	x	x	x	x	x	
LO	Identify the call sign suffixes for aeronautical stations	x	x	x	x	x	
LO	Explain when the call sign may be omitted or abbreviated to the use of suffix only	x	x	x	x	x	
091 02 07 00	**Radiotelephony call signs for aircraft including use of abbreviated call signs**						
LO	List the three different ways to compose an aircraft call sign	x	x	x	x	x	
LO	Describe the abbreviated forms for aircrfaft call signs	x	x	x	x	x	
LO	Explain when aircraft call signs may be abbreviated	x	x	x	x	x	
091 02 08 00	**Transfer of communication**						

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Syllabus reference	**Syllabus details and associated Learning Objectives**	*Aeroplane*		*Helicopter*			*IR*
		ATPL	CPL	ATPL /IR	ATPL	CPL	
LO	Describe the procedure for transfer of communication - By groundstation - By aircraft	x	x	x	x	x	
091 02 09 00	**Test procedures including readability scale**						
LO	Explain how to test radio transmission and reception	x	x	x	x	x	
LO	State the readability scale and explain its meaning	x	x	x	x	x	
091 02 10 00	**Read back and acknowledgement requirements**						
LO	State the requirement to read back ATC route clearaces	x	x	x	x	x	
LO	State the requirement to read back clearances related to in runway in use	x	x	x	x	x	
LO	State the requirement to read back “other cleareances” including conditional clearances	x	x	x	x	x	
LO	State the the requirements to read back other data such as runway, SSR codes etc	x	x	x	x	x	
091 02 11 00	**Radar procedural phraseology**						
LO	Use the correct phraseology for an aircraft receiving a radar service - Radar Identification - Radar vectoring - Traffic information and avoidance - SSR procedures	x	x	x	x	x	
091 03 00 00	**RELEVANT WEATHER INFORMATION TERMS (VFR)**						
091 03 01 00	**Aerodrome weather**						

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Syllabus reference	**Syllabus details and associated Learning Objectives**	*Aeroplane*		*Helicopter*			*IR*
		ATPL	CPL	ATPL /IR	ATPL	CPL	
LO	List the contents of aerodrome weather reports and state units of measurement used for each item - Wind direction and speed - Variation of wind direction and speed - Visibility - Present weather - Cloud amount and type (including the meaning of CAVOK) - Air temperature and dewpoint - Pressure values (QNH, QFE) - Supplementary information (aerodrome warnings, landing runway, runway conditions, restrictions, obstructions, windshear warnings, etc)	x	x	x	x	x	
091 03 02 00	**Weather broadcast**						
LO	List the sources of weather information available for aircraft in flight	x	x	x	x	x	
LO	Explain the meaning of the abbreviations: ATIS, VOLMET	x	x	x	x	x	
091 04 00 00	**ACTION REQUIRED TO BE TAKEN IN CASE OF COMMUNICATION FAILURE**						
LO	State the action to be taken in case of communication failure on a controlled VFR-flight	x	x	x	x	x	
LO	Identify the frequencies to be used in an attempt to establish communication	x	x	x	x	x	
LO	State the additional information that should be transmitted, in the event of receiver failure	x	x	x	x	x	
LO	Identify the SSR code that may be used to indicate communication failure	x	x	x	x	x	
LO	Explain the action to be taken by a pilot with Com failure in the aerodrome traffic pattern at controlled aerodromes	x	x	x	x	x	

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Syllabus reference	**Syllabus details and associated Learning Objectives**	*Aeroplane*		*Helicopter*			*IR*
		ATPL	CPL	ATPL /IR	ATPL	CPL	
091 05 00 00	**DISTRESS AND URGENCY PROCEDURES**						
091 05 01 00	**Distress (definition – frequencies – watch of distress frequencies – distress signal – distress message)**						
LO	State the DISTRESS procedures	x	x	x	x	x	
LO	Define DISTRESS	x	x	x	x	x	
LO	Identify the frequencies that should be used by aircraft in DISTRESS	x	x	x	x	x	
LO	Specify the emergency SSR codes that may be used by aircraft, and the meaning of the codes	x	x	x	x	x	
LO	Describe the action to be taken by the station wich receives a DISTRESS message	x	x	x	x	x	
LO	Describe the action to be taken by all other stations when a DISTRESS procedure is in progress	x	x	x	x	x	
LO	List the content of a DISTRESS signal/message in the correct sequence	x	x	x	x	x	
091 05 02 00	**Urgency (definition – frequencies – urgency signal – urgency message)**						
LO	State the URGENCY procedures	x	x	x	x	x	
LO	Define URGENCY	x	x	x	x	x	
LO	Identify the frequencies that should be used by aircraft in URGENCY	x	x	x	x	x	
LO	Describe the action to be taken by the station wich receives an URGENCY message	x	x	x	x	x	
LO	Describe the action to be taken by the station wich receives an URGENCY message	x	x	x	x	x	
LO	List the content of an URGENCY signal/message in the correct sequence	x	x	x	x	x	

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Syllabus reference	**Syllabus details and associated Learning Objectives**	*Aeroplane*		*Helicopter*			*IR*
		ATPL	CPL	ATPL /IR	ATPL	CPL	
091 06 00 00	**GENERAL PRINCIPLES OF VHF PROPAGATION AND ALLOCATION OF FREQUENCIES**						
LO	Describe the radio frequency spectrum with particular reference to VHF	x	x	x	x	x	
LO	Describe the radio frequency spectrum of the bands into wich the radio frequency spectrum is divided	x	x	x	x	x	
LO	Identify the frequency range of the VHF band	x	x	x	x	x	
LO	Name the band normally used for Aeronautical Mobile Service voice communication	x	x	x	x	x	
LO	State the frequency separation allocated between consecutive VHF frequencies	x	x	x	x	x	
LO	Describe the propagation characteristics of radio transmissions in the VHF band	x	x	x	x	x	
LO	Describe factors wich reduce the effective range and quality of radio transmissions	x	x	x	x	x	
LO	State wich of these factors apply to the VHF band	x	x	x	x	x	
LO	Calculate the effective range of VHF transmissions assuming no attenuating factors	x	x	x	x	x	
092 00 00 00	**IFR COMMUNICATIONS**						
092 01 00 00	**DEFINITIONS**						
092 01 01 00	**Meanings and significance of associated terms**						
LO	As for VFR plus terms used in conjuntion with approach and holding procedures	x		x			x
092 01 02 00	**Air Traffic Control abbreviations**						
LO	As for VFR plus additional IFR related terms	x		x			x

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Syllabus reference	**Syllabus details and associated Learning Objectives**	*Aeroplane*		*Helicopter*			*IR*
		ATPL	CPL	ATPL /IR	ATPL	CPL	
092 01 03 00	**Q-code groups commonly used in RTF air-ground communications**						
LO	Define Q-code groups commonly used in RTF air to ground communications: - Pressure settings - Directions and bearings	x		x			x
LO	State the procedure for obtaining a bearing information in flight	x		x			x
092 01 04 00	**Categories of messages**						
LO	List the categories of messages in order of priority	x		x			x
LO	Identify the types of messages appropriate to each category	x		x			x
LO	List the priority of a message (given examples of messages to compare)	x		x			x
092 02 00 00	**GENERAL OPERATING PROCEDURES**						
092 02 01 00	**Transmission of letters**						
LO	State the phonetic alphabet used in radiotelephony	x		x			x
LO	Identify the occasions when words should be spelt	x		x			x
092 02 02 00	**Transmission of numbers (including level information)**	**x**		**x**			**x**
LO	Describe the method of transmitting numbers - Pronunciation - Single digits, whole hundreds and whole thousands	x		x			x
092 02 03 00	**Transmission of time**						

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Syllabus reference	**Syllabus details and associated Learning Objectives**	*Aeroplane*		*Helicopter*			*IR*
		ATPL	CPL	ATPL /IR	ATPL	CPL	
LO	Describe the ways of transmitting time - Standard time reference (UTC) - Minutes, minutes and hours, when required	x		x			x
092 02 04 00	**Transmission technique**						
LO	Explain the techniques used for making good R/T transmissions	x		x			x
092 02 05 00	**Standard words and phrases (relevant RTF phraseology included)**						
LO	Define the meaning of standard words and phrases	x		x			x
LO	Use correct standard phraseology for each phase of IFR flight - Pushback - IFR depature - Airways clearances - Position reporting - Approach procedures - IFR arrivals	x		x			x
092 02 06 00	**Radiotelephony call signs for aeronautical stations including use of abbreviated call signs**						
LO	As for VFR	x		x			x
LO	Name the two parts of the call sign af an aeronautical station	x		x			x
LO	Identify the call sign suffixes for aeronautical stations	x		x			x
LO	Explain when the call sign may be abbreviated to the use of suffix only	x		x			x
092 02 07 00	**Radiotelephony call signs for aircraft including use of abbreviated call signs**						

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Syllabus reference	**Syllabus details and associated Learning Objectives**	*Aeroplane*		*Helicopter*			*IR*
		ATPL	CPL	ATPL /IR	ATPL	CPL	
LO	As for VFR	x		x			x
LO	Explain when the suffix “HEAVY” should be used with an aircraft call sign	x		x			x
LO	Explain the use of the phrase “Change your call sign to . . .”	x		x			x
LO	Explain the use of of the phrase “Revert to flight plan call sign”	x		x			x
092 02 08 00	**Transfer of communication**						
LO	Describe the procedure for transfer of communication - By ground station - By aircraft	x		x			x
092 02 09 00	**Test procedures including readability scale; establishment of RTF communication**						
LO	Explain how to test radio transmission and reception	x		x			x
LO	State the readability scale and explain its meaning	x		x			x
092 02 10 00	**Read back and acknowledgement requirements**						
LO	State the requirement to read back ATC route clearances	x		x			x
LO	State the requirement to read back clearances related to runway in use	x		x			x
LO	State the requirement to read back other clearances including conditional clearances	x		x			x
LO	State the requirement to read back data such as runway, SSR codes etc	x		x			x
092 02 11 00	**Radar procedural phraseology**						

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Syllabus reference	**Syllabus details and associated Learning Objectives**	*Aeroplane*		*Helicopter*			*IR*
		ATPL	CPL	ATPL /IR	ATPL	CPL	
LO	Use the correct phraseology for an aircraft receiving a radar service - Radar identification - Radar vectoring - Traffic information and avoidance - SSR procedures	x		x			x
092 02 12 00	**Level changes and reports**						
LO	Use the correct term to describe vertical position - In relation to flight level (standard pressure setting) - In relation to Altitude (metres/feet on QNH) - In relation to Height (metres/feet on QNH)	x		x			x
092 03 00 00	**ACTION REQUIRED TO BE TAKEN IN CASE OF COMMUNICATION FAILURE**						
LO	Describe the action to be taken in communication failure on a IFR flight	x		x			x
LO	Describe the action to be taken in case of communication failure on a IFR flight when flying in VMC and the flight will be terminated in VMC	x		x			x
LO	Describe the action to be taken in case of communication failure on a IFR flight when flying in IMC	x		x			x
092 04 00 00	**DISTRESS AND URGENCY PROCEDURES**						
092 04 01 00	**PAN medical**						
LO	Describe the type of flights to wich PAN MEDICAL applies	x		x			x
LO	List the content of a PAN MEDICAL message in correct sequence	x		x			x

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Syllabus reference	**Syllabus details and associated Learning Objectives**	*Aeroplane*		*Helicopter*			*IR*
		ATPL	CPL	ATPL /IR	ATPL	CPL	
092 04 02 00	**Distress (definition – frequencies – watch of distress frequencies – distress signal – distress message)**						
LO	State the DISTRESS procedures	x		x			x
LO	Define DISTRESS	x		x			x
LO	Identify the frequencies that should be used by aircraft in DISTRESS	x		x			x
LO	Specify the emergency SSR codes that may be used by aircraft, and the meaning of the codes	x		x			x
LO	Describe the action to be taken by the station wich receives a DISTRESS messages	x		x			x
LO	Describe the action to be taken by all other stations when a DISTRESS procedure is in progress	x		x			x
LO	List the content of a DISTRESS message	x		x			x
092 04 03 00	**Urgency (definition – frequencies – urgency signal – urgency message)**						
LO	State the URGENCY procedures	x		x			x
LO	Define URGENCY	x		x			x
LO	Identify the frequencies that should be used by aircraft in URGENCY	x		x			x
LO	Describe the action to be taken by the station wich receives a URGENCY message	x		x			x
LO	Describe the action to be taken by the station wich receives a URGENCY message	x		x			x
LO	List the content of a URGENCY signal/message in the correct sequence	x		x			x
092 05 00 00	**RELEVANT WEATHER INFORMATION TERM**						
092 05 01 00	**Aerodrome weather**						
LO	As for VFR plus the following	x		x			x
LO	Runway visual range	x		x			x

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Syllabus reference	**Syllabus details and associated Learning Objectives**	*Aeroplane*		*Helicopter*			*IR*
		ATPL	CPL	ATPL /IR	ATPL	CPL	
LO	Braking action (friction coefficient)	x		x			x
092 05 02 00	**Weather broadcast**						
LO	As for VFR plus the following	x		x			x
LO	Explain when aircraft routine meteorological observations should be made	x		x			x
LO	Explain when aircraft Special meteorological observations should be made	x		x			x
092 06 00 00	**GENERAL PRINCIPLES OF VHF PROPAGATION AND ALLOCATION OF FREQUENCIES**						
LO	Describe the radio frequency spectrum with particular reference to VHF	x		x			x
LO	State the names of the bands into which the radio frequency spectrum is divided	x		x			x
LO	Identify the frequency range of the VHF band	x		x			x
LO	Name the band normally used for Aeronautical Mobile Service voice communications	x		x			x
LO	State the frequency separation allocated between consecutive VHF frequencies	x		x			x
LO	Describe the propagation characteristics of radio transmissions in the VHF band	x		x			x
LO	Describe the factors wich reduce the effective range and quality of radio transmissions	x		x			x
LO	State wich of these factors apply to the VHF band	x		x			x
LO	Calculate the effective range of VHF transmissions assuming no attenuating factors	x		x			x
092 07 00 00	**MORSE CODE**						
LO	Identify radio navigation aids (VOR, DME, NDB, ILS) from their morse code identifiers	x	x	x	x	x	x
LO	SELCAL, TCAS, ACARS phraseology and procedures	x	x	x	x	x	x

END