



COURSE: Onboard Systems Design		
DEGREE: Aerospace Engineering	YEAR: 2015 / 2016	TERM:

WEEKLY PLANNING									
WEEK	SESSION	DESCRIPTION	GROUPS (mark X)		SPECIAL ROOM FOR SESSION (Computer class room, audio-visual class room)	Indicate YES/NO If the session needs 2 teachers	WEEKLY PROGRAMMING FOR STUDENT		
			LECTURES	SEMINARS			DESCRIPTION	CLASS HOURS	HOMEWORK HOURS (Max. 7h week)
1	1	<ul style="list-style-type: none"> Onboard Systems Design Introduction. Avionic Systems Technology Introduction. 	X			No	<ul style="list-style-type: none"> Reading the reference material: <ul style="list-style-type: none"> Subject Slides. Aircraft Systems; chapter 12. The Avionics Handbook, sections I and V. Looking for additional information or performing trade-offs. Study and personal work. 	1,67	2
2	2	<ul style="list-style-type: none"> Avionics Systems Architectures. Integrated Modular Avionics. IMA Application Exercise. 	X	X		No	<ul style="list-style-type: none"> Reading the reference material: <ul style="list-style-type: none"> Subject Slides. Aircraft Systems, chapter 12. The Avionics Handbook, sections I and V. Looking for additional information or 	1,67	2

							performing trade-offs. - Study and personal work.		
3	3	<ul style="list-style-type: none"> • Avionic Systems Technology: <ul style="list-style-type: none"> - Discrete and Analogue Interfaces. - Digital Data Buses: <ul style="list-style-type: none"> ○ Digital Data Buses Introduction. ○ ARINC 429 Introduction. ○ ARINC 429 Application Exercise. 	X	X		No	<ul style="list-style-type: none"> - Reading the reference material: <ul style="list-style-type: none"> ○ Subject Slides. ○ Aircraft Systems, chapter 12 and chapter 12.3 for the examples. ○ The Avionics Handbook, section I. - Looking for additional information or performing trade-offs. - Study and personal work. 	1,67	2
4	4	<ul style="list-style-type: none"> • Avionic Systems Technology. Digital Data Buses: <ul style="list-style-type: none"> - MIL-STD-1553B Introduction. - CAN Bus and MIL-STD-1553B Application Exercise. 	X	X		No	<ul style="list-style-type: none"> - Reading the reference material: <ul style="list-style-type: none"> ○ Subject Slides. ○ Aircraft Systems, chapter 12 and chapter 12.3 for the examples. ○ The Avionics Handbook, section I. - Looking for additional information or performing trade-offs. - Study and personal work. 	1,67	2
5	5	<ul style="list-style-type: none"> • Certification Considerations for Onboard Systems Design: <ul style="list-style-type: none"> - SAE ARP4754/A Introduction. - SAE ARP4761 Introduction. - Application Exercise. 	X	X		No	<ul style="list-style-type: none"> - Reading the reference material: <ul style="list-style-type: none"> ○ Subject Slides. ○ The Avionics Handbook; chapter 23. ○ ARP4754/A. - Looking for additional information or performing trade-offs. - Study and personal work. 	1,67	2
6	6	<ul style="list-style-type: none"> • Development Assurance for Onboard Systems Design: <ul style="list-style-type: none"> - SAE ARP4754/A. - RTCA DO-178B/C Introduction. - RTCA DO-254 Introduction. - Application Exercise. 	X	X		No	<ul style="list-style-type: none"> - Reading the reference material: <ul style="list-style-type: none"> ○ Subject Slides. ○ ARP4754/A. ○ The Avionics Handbook; chapter 23. ○ DO-178B/C. - Looking for additional information or performing trade-offs. - Study and personal work. 	1,67	2

7	7	<ul style="list-style-type: none"> • Systems Engineering Overview: <ul style="list-style-type: none"> - Systems Engineering Definition. - Systems Engineering Frameworks. - INCOSE Systems Engineering Introduction. • Systems Design Process I: <ul style="list-style-type: none"> - Systems Engineering Technical Processes, Part I. - Concept of Operations Exercise. 	X	X		No	<ul style="list-style-type: none"> - Reading the reference material: <ul style="list-style-type: none"> o Subject slides. o INCOSE Handbook. - Looking for additional information or performing trade-offs. - Study and personal work. 	1,67	2
8	8	<ul style="list-style-type: none"> • Systems Design Process II: <ul style="list-style-type: none"> - Systems Engineering Technical Processes, Part II. - Application Exercise. 	X	X		No	<ul style="list-style-type: none"> - Reading the reference material: <ul style="list-style-type: none"> o Subject slides. o INCOSE Handbook. - Looking for additional information or performing trade-offs. - Study and personal work. 	1,67	2
9	9	<ul style="list-style-type: none"> • Systems Design Process III: <ul style="list-style-type: none"> - Systems Engineering Management Processes. - Systems Engineering Organizational Processes. • Aircraft Systems Verification and Validation: <ul style="list-style-type: none"> - Verification vs Validation. - Integration Testing. - RIG Testing. - Ground Tests. - Flight Tests. - Application Exercise. 	X	X		No	<ul style="list-style-type: none"> - Reading the reference material: <ul style="list-style-type: none"> o Subject Slides. o INCOSE Handbook. - Looking for additional information or performing trade-offs. - Study and personal work. 	1,67	2
10	10	<ul style="list-style-type: none"> • Test Bench Practice I: <ul style="list-style-type: none"> - Open System Mission Computer (OSMC) Test Bench Description. - Practice on OSMC Test Bench. 		X	Avionics Lab	No	<ul style="list-style-type: none"> - Reading the reference material: <ul style="list-style-type: none"> o Practice Description. o Subject Slides. - Study and personal work. 	1,67	4
11	11	<ul style="list-style-type: none"> • Test Bench Practice II: <ul style="list-style-type: none"> - Practice of Onboard System Verification on OSMC Test Bench. 		X	Avionics Lab	No	<ul style="list-style-type: none"> - Reading the reference material: <ul style="list-style-type: none"> o Practice Description. o Subject Slides. - Study and personal work. 	1,67	4

12	12	<ul style="list-style-type: none"> Primary Flight Display Practice I: <ul style="list-style-type: none"> Design Development Environment Description: Esterel™SCADE Display. Primary Flight Display Practice I. 		X	Avionics Lab	No	<ul style="list-style-type: none"> Reading the reference material: <ul style="list-style-type: none"> Practice Description. Subject Slides. Study and personal work. 	1,67	4
13	13	<ul style="list-style-type: none"> Primary Flight Display Practice II. 		X	Avionics Lab	No	<ul style="list-style-type: none"> Reading the reference material: <ul style="list-style-type: none"> Practice Description. Subject Slides. Study and personal work. 	1,67	4
14	14	<ul style="list-style-type: none"> Systems Integration Practice. 		X	Avionics Lab	No	<ul style="list-style-type: none"> Reading the reference material: <ul style="list-style-type: none"> Practice Description. Subject Slides. Study and personal work. 	1,67	4

Subtotal 1

23,38

38

Total 1 (Hours of class plus student homework hours between weeks 1-7)

61,38

8		Tutorials, handing in, etc							
9		Assessment							
10								3	21
11									

Subtotal 2

3

21

Total 2 (Hours of class plus student homework hours between weeks 8-11)

24

TOTAL (Total 1 + Total 2. Maximum 90 horas)

(*) In EPS are given an additional 6 hours of complementary teaching along two sessions.