

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>(-)</b>		Code <b>1010604161010637566</b>
Field of study <b>Aerospace Engineering</b>	Profile of study (general academic, practical) <b>general academic</b>	Year /Semester <b>3 / 6</b>
Elective path/specialty <b>Aircraft Engines and Airframes</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time,part-time) <b>part-time</b>	
No. of hours Lecture: <b>18</b> Classes: <b>9</b> Laboratory: <b>-</b> Project/seminars: <b>-</b>		No. of credits <b>4</b>
Status of the course in the study program (Basic, major, other) <b>other</b>		(university-wide, from another field) <b>university-wide</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>4 100%</b> <b>4 100%</b>
<b>Responsible for subject / lecturer:</b>  Dr eng. Wojciech Prokopowicz email: wojtek379@wp.pl tel. +48 606 638 410 Faculty of Transport Engineering ul. Piotrowo 3; 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Basic knowledge in the field of mechanics, airframe construction, metrology, strength of materials, non-destructive testing
2	<b>Skills</b>	He can apply the scientific method in solving problems, carrying out experiments and gain conclusions
3	<b>Social competencies</b>	He knows the limits of his knowledge and skills; can precisely formulate questions, understands the need for further education
<b>Assumptions and objectives of the course:</b> -Knowledge of the purpose, construction and principles of operation of the basic technical parameters of devices and systems. Ability to read and interpret indications of on-board equipment.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. has ordered, theoretically founded general knowledge covering key issues in the field of on-board equipment, as well as on-board and terrestrial electronic communication systems - [[K1_W09]]		
2. has detailed knowledge related to selected issues in the field of construction of manned and unmanned aircraft, including on-board equipment and their main components - [[K1_W13]]		
<b>Skills:</b>		
1. Is able to use verbal communication in one additional foreign language at the level of everyday language - [[K1A_U07]]		
2. Is able to prepare technical documentation descriptively - drawing an engineering task - [[K1A_U06]]		
3. Can use the acquired mathematical theories to create and analyze simple mathematical models of machines and their components and simple technical systems. - [[K1A_U09]]		
4. Able to draw a diagram, a simple machine element and a component of the airframe according to the principles of technical drawing - [[K1A_U16]]		
<b>Social competencies:</b>		
1. understands the need to learn throughout life; can inspire and organize the learning process of other people - [[K1_K01]]		
2. is aware of the importance and understands the non-technical aspects and effects of engineering activities, including its impact on the environment, and the related responsibility for decisions - [[K1_K02]]		

<b>Assessment methods of study outcomes</b>		
- Written test - Oral test		
<b>Course description</b>		
-Pilot and navigation equipment. Power, electric, hydraulic and pneumatic equipment. Diagnostic, communication and location equipment. Specialized equipment: human safety, safety of the flying vessel.		
<b>Basic bibliography:</b> <ol style="list-style-type: none"> <li>1. Bilski J., Polak Z., Rypulak A., ?Awionika, przyrządy i systemy pokładowe?, WSOSP, Dęblin 2001</li> <li>2. Gosiewski Z., Ortyl A., ?Inercjalny, bezkardanowy system orientacji przestrzennej i nawigacji ? zasada działania?, Wyd. Instytut Lotnictwa, 1999</li> <li>3. Grabiec R., ?Lotnicze systemy zobrazowania informacji?, skrypt WAT, 1996</li> <li>4. Kazana J, Lipski J., ?Budowa i eksploatacja pokładowych przyrządów pokładowych?, Wydawnictwa Komunikacji i Łączności, Warszawa 1983</li> <li>5. Narkiewicz J., ?Podstawy układów nawigacyjnych?, WKŁ, 1999</li> <li>6. Narkiewicz J., ?GPS ? Globalny System Pozycyjny?, WKŁ, 2003</li> <li>7. Stola M., ?Wyposażenie samolotów?, Wydawnictwo Politechniki Warszawskiej, Warszawa, 1978</li> <li>8. Szczepański C., ?Symulatory lotu?, Wydawnictwo Politechniki Warszawskiej, Warszawa, 1990</li> <li>9. Farrell, Jay A., ?The Global Positioning System and Inertial Navigation?, 1997</li> <li>10. Grewal, Mohinder S., ?Global positioning systems, inertial navigation, and integration?, 2001</li> <li>11. Kayton M., Fried W.R., ?Avionic Navigation Systems?, Second Edition, John Wiley, 1996</li> <li>12. Moir I., Seabridge A., ?Aircraft Systems?, Longman Scientific &amp; Technical, London, 1992</li> <li>13. Middleton D.H., ?Avionic Systems?, Longman Scientific &amp; Technical, 1989</li> <li>14. Moir I., Seabridge A., ?Aircraft Systems?, Longman Scientific &amp; Technical, London, 1992</li> <li>15. Moir I., ?Civil Avionics Systems?, 2003</li> <li>16. Neese W., ?Aircraft Hydraulic Systems?, Krieger Publishing Company, 1991</li> <li>17. Pallet E.H.J., ?Aircraft Instrument Systems?, IAP, 1993</li> <li>18. Pallet E.H.J., ?Aircraft Instruments and Integrated Systems?, Longman Scientific and Technical Series, 1992</li> <li>19. Spitzer, Cary R. Red., ?The avionics handbook?, 2001</li> <li>20. Titterton, David H., ?Strapdown Inertial Navigation Technology?, 1997</li> </ol>		
<b>Additional bibliography:</b> <ol style="list-style-type: none"> <li>1. Technical Order, F-16, C-130 Herkules, B737, ERJ-145, G550</li> </ol>		
<b>Result of average student's workload</b>		
Activity	Time (working hours)	
1. Preparation for the exam	45	
2. Participation in the exam	10	
3. Participation in lectures	4	
<b>Student's workload</b>		
Source of workload	hours	ECTS
Total workload	60	4
Contact hours	50	3
Practical activities	10	1