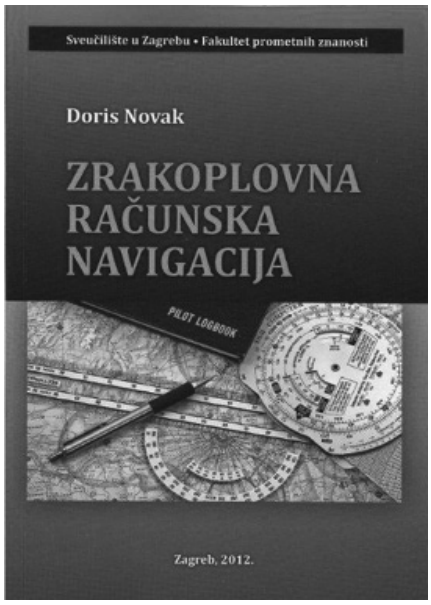

University textbook
Assist. Prof. Doris Novak, Ph.D.

ZRAKOPLOVNA RAČUNSKA NAVIGACIJA (GENERAL NAVIGATION)

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In 2012 the Faculty of Transport and Traffic Sciences University of Zagreb published the university textbook *General Navigation* written by Assist.Prof. Doris Novak, Ph.D., professor at the subjects of General and Radio navigation at the Study Course of Aeronautics at the Faculty. Certainly, a welcome textbook in the field insufficiently covered by national literature, and thus also with insufficiently systematized Croatian terminology.

The contents of the textbook follow the syllabus of the subject General Navigation I taught at the undergraduate study programme of aeronautics at the Faculty of Transport and Traffic Sciences University of Zagreb, so that it is primarily intended for the students of aeronautics – future pilots for easier following of this subject. It represents the basis for further involvement and study of the navigation profession.

Using the synergy effect of combined theoretical knowledge and practical flying experience, the scientifically founded presentation of the demanding material appropriate for the level of university textbook has been successfully systematized. With exact presentation of individual topics, selected solutions, laws, methods, or presented principles, expanded by accompanying data and the descriptions make the material interesting.

The textbook has been organized in 12 sections whose titles clearly reflect the contents which include:

1. Aircraft navigation;
2. Shape of the Earth;
3. Maps and projections;
4. Time as navigation element;
5. Compass and flight direction; Kompas i pravac leta
6. Altitude;
7. Speed;
8. Determining the aircraft position;
9. 1:60 Rule;
10. Pressure Navigation;
11. Inertial Navigation;
12. Flight preparation.

Special attention is paid to terminology. Certain terms and concepts in the textbook have not been literally translated from English, but rather explanation and definition, as well as the English term have been given along with the concept.

The first section studies the principle of dead reckoning navigation as well as the implementation of individual methods and types of navigation in flying. A brief historical overview of the development of the navigation concepts presents the fundamental principles of determining the position which in different versions are being applied today as well.

The second and third section describe the shape of the Earth, present the coordinate systems, cartographic projections, and air navigation maps. The time as navigation element is introduced and defined in the fourth section. The fifth section presents the primary navigation instrument – compass, with its specific characteristics and errors in navigation guidance. The flight velocity, together with the altitude and time form the basis of dead reckoning. These are analyzed in the sixth and seventh section. The eighth section presents determining of the positioning of aircraft using the principle of dead reckoning. Different methods of solving navigational problems in planning and maintaining the planned flying route are presented. The method of calculation and usage of the methods in navigational practice is suggested.

Navigational calculations in flight, using the 1:60 rule, are presented in Section 9. The calculations applying this rule are very simple and sufficiently accurate, so that the Section gives an insight into different methods of solving navigational problems in practice.

The pressure navigation, although the described method is no longer used, has been studied in the tenth section, in order to confirm the basic assumptions of the navigational methods and procedures presented in the eighth and ninth section. The author considers that this approach rounds up the unit and understanding of the basic dead reckoning principles.

The eleventh section presents the aircraft inertial navigation and reference systems as the base for de-

termining the position (in principle described in the first section) with advanced navigational systems of avionics that have been gradually taking up the primary role in the aircraft guidance and control. In the concluding, twelfth, section the procedures of navigational preparation of flight have been presented. The empirical approach in the methods and methodology of preparing the flight proves to be useful in the systematization and standardization of solving the concrete navigational problems and tasks.

The study program of aeronautics has been certified by the Croatian Civil Aviation Agency so that the textbook can be used in the preparation for the theoretical exam for acquiring air transport pilot licence (ATPL). The textbook can also be useful in practice for the completed civil and military pilots, air traffic controllers, and in general for all those who are in any way involved in aviation.

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