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**Department of Water Resource Engineering**

**College of Engineering**

**University of Salahaddin**

**Subject: Hydraulic structures**

**Course Book of Fourth Year**

**Lecturer: Dr. Jehan Sheikh Suleimany**

**Academic Year 2019/2020**

**Course Book**

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| **1. Course name** | **Hydraulic structures** |
| **2. Lecturer in charge** | **Dr.Jehan Sheikh Suleimany** |
| **3. Department/ College** | **Water Resource engineering department/college of engineering** |
| **4. Contact** | **e-mail:** **jehan\_fattah@yahoo.com****, jehanmohammed.sheikhsuleimany@us.edu.krd****Tel: 07513042595** |
| **5. Time (in hours) per week**  | **For example Theory: 2****Practical: 2**  |
| **6. Office hours** | **2 hours/week** |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | **More than 25 years' experience in teaching deferent subjects** |
| **9. Keywords** | **Weirs,barrages,drop, blighs creep theory,khosla** |
| **10. Course overview:** * Construction on permeable foundations and seepage problems. safety of structures, Bligh , Lane, and Khosla theory, uplift pressure and exit gradients-, Design with consideration of piping ,uplift pressure and scouring
* Hydraulic jump and energy dissipation devices
* Design of Diversion head works(weirs , barrages, falls)
* River training works, cross drainage works ,spillways, energy dissipation)
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| **11. Course objective:*** Integrate the hydraulics and water resources background by involving the students in water structures design applications
* To introduce students to the fundamentals of hydraulic design of various hydraulic structures.
* To recognize the different types of hydraulic structures, to understand its purpose and function and to select the most appropriate structure and location for a specific problem
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| **12. Student's obligation**Students should perform one midterm exams and one final exam and to submit group work assignments represented by a report on design of a barrage completely, conducting short quizzes and they should attend the classes regularly |
| **13. Forms of teaching**The teaching material will be handover to the students as a hard and soft copy in advance.Then, the classes will be delivered as PowerPoint presentation and examples will be illustrated in class. |
| **14. Assessment scheme**Midterm Exam 30/40Course works (groups) 10/40Final Exam 60/100؟‌ |
| **15. Student learning outcome:**Upon successful completion of this course, the student will be able to* Identify hydraulic structure types and functions.
* Analyse and design hydraulic structures using relevant code of practice
* Undertake design and detailing of water resource engineering works.
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| **16. Course Reading List and References‌:**1. Theory and Design and Irrigation Structures – Vol. 1. Channels and Tubewells. by R. S. Vershvey, S. C. Gupta, R. I. Gupta. New Chand and Brothers Roorkee, India, 1983.
2. Hydraulic Structures. P. Novak, A.I.B. Moffat, C. Nalluri, R. Narayanan**,** Fourth edition December 21,2006by CRC press
3. Irrigation engineering and hydraulic structures, S.K Garg, 24th Edition, Khanna publishers, 2012
4. Irrigation & Water Power Engineerin, B.C.Punmia, B.B.L. Pande, Ashok K.R. Jain, Arun K.R. Jain, 16th Edition, Laxmi Publications (P) Ltd., New Delhi, 2009.
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| **17. The Topics:** | **Lecturer's name** |
| Canal design and lining, Construction on permeable foundations and seepage problems, Hydraulic jump and energy dissipation devices, Main canal head works, Main canal head regulator, Head and cross regulator, Drop or fall structures, Drainage crossing structures, Safety structures | Lecturer's nameJehan SheikhSuleimany |
| **18. Practical Topics (If there is any)** |  |
| Drawing l-sections of channels and other different types of hydraulic structures  | Lecturer's nameJehan Sheikh Suleimany |
| **19. Examinations:*****1-****Design a barrage**2-Check the thickness of the floor**3-check safety of the structure against piping* |
| **20. Extra notes:** |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ** This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.*(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).*ئه‌م کۆرسبووکه‌ ده‌بێت له‌لایه‌ن هاوه‌ڵێکی ئه‌کادیمیه‌وه‌ سه‌یر بکرێت و ناوه‌ڕۆکی بابه‌ته‌کانی کۆرسه‌که‌ په‌سه‌ند بکات و جه‌ند ووشه‌یه‌ک بنووسێت له‌سه‌ر شیاوی ناوه‌ڕۆکی کۆرسه‌که و واژووی له‌سه‌ر بکات.هاوه‌ڵ ئه‌و که‌سه‌یه‌ که‌ زانیاری هه‌بێت له‌سه‌ر کۆرسه‌که‌ و ده‌بیت پله‌ی زانستی له‌ مامۆستا که‌متر نه‌بێت.‌‌  |