AUN - QA
Self Assessment Report

B.S. Water Resources Engineering
Faculty of Engineering
University of Brawijaya
2016
By: Ir. Mohammad Sholichin, MT., Ph.D
(Head of Department)
“Self Assessment Report” (SAR) document is prepared for the ASEAN University Network – Quality Assurance Assessment for Bachelor Science Water Resources Engineering at Universitas Brawijaya.

Bachelor Science of Water Resources Engineering (BSWRE) which was established since 1976 is the first and leading institutions in the field of water resources engineering in Indonesia.
BSWRE is established in 1976

Ministry of Education Grant year 2001 to 2004 and 2007-2009


CERTIFIED BY ISO 9001:2008 SINCE 2011

UBAQA (Universitas Brawijaya Annual Quality Assurance) Award since 2009, 2010 and 2011
Holding biannual international conference with the name of "International Conference of Water Resources Development and Environmental Protection" (ICWRDEP) for the first in 2015.

Research cooperation activities which obtained by the lecturers and departments at national level (Kemristekdikti) and international level (JICA) routinely

in 2015 there was a visiting lecture from University of Miyazaki Japan and in this year from University Sains Malaysia (USM), Malaysia

The improvement of student quality continues conducted in 2016 by sending 7 students to Tokyo-Miyazaki Japan in the activities of Sakura Science Program.
The student of BSWRE has an advantage in its field, the last had won the first champion of national dam design competition in 2015 at the University of Mataram.

The first, second, and third champion in national irrigation network planning competition at University of Muhammadiyah Makassar in 2016.

BSWRE also active (improvement of scientific competence) in Indonesian Hydraulic Engineer Association (IHEA), National Comittee of Dam Safety, or INACOLD, 2016.

Fourth prize and the best presenter in national scientific writing competition entitled spores (infiltration wells, building alternative water conservation land).

A place of reference in the dam construction in Indonesia → Especially hydraulic physical model of dam.
Water Resources Engineering Department become an institution of **higher education in the field of water resources** that excel at both regional and international levels, and produce graduates with good morals, competent, and innovative, through the *TRI DHARMA PEGURUAN TINGGI* / Three Pillars of Higher Education (Education, Research, and Community Services)

1. Organize quality education to produce graduates with academic ability and applied competency in environmentally-based water resources field.
2. Organize research in the development and dissemination of knowledge and technology, and implement community service activities, especially in the areas of utilization and management of water resources for peoples’s welfare.
LEARNING OUTCOMES
FORMULATION PROCESS

1. Graduate Attributes
   Learning Outcome of Study Program

2. Knowledge Block
   Formulated Into BSWRE Curriculum

3. Translated into Courses Learning Outcome
   Distributed into Each Semester

4. Learning Method

SWOT ANALYSIS

Tracer study
Need Assessment, Market signal
Expected Learning Outcomes

- **ELO 1**: Ability to apply mathematics, science, information technology, and engineering practice in water resources engineering.
- **ELO 2**: Ability to manage and solve water resources engineering problems and analyzing the possible problem solving.
- **ELO 3**: Effective managerial ability on the field of project management and activity standardization.
- **ELO 4**: Ability to apply ethics and moral considerations in professional practice.
- **ELO 5**: Ability to communicate effectively and efficiently.
- **ELO 6**: Ability in education and training and life-long learning.
- **ELO 7**: Ability of self-awareness and team work.
## The Coverage of BSWRE’s ELO

<table>
<thead>
<tr>
<th>No</th>
<th>Outcomes Classification</th>
<th>Knowledge block</th>
<th>Credits</th>
<th>ELOs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Other Competence/ General national curriculum (OC)</td>
<td>Mathematic, Indonesian Language</td>
<td>8</td>
<td>1, 7</td>
</tr>
<tr>
<td>2</td>
<td>Design Competence on Water Resources Engineering Infrastructure (DCWREI)</td>
<td>Hydrology, Hydraulic, Soil Mechanic, Irrigation, Steel Structure, Concrete Structure, Concrete Structure, Drainage and Dam.</td>
<td>67</td>
<td>2, 3</td>
</tr>
<tr>
<td>4</td>
<td>Supporting Competence (SC)</td>
<td>Statistic, civil society, Religion, etic, Field project, Skripsi</td>
<td>48</td>
<td>4, 5, 6</td>
</tr>
</tbody>
</table>
## Structure of Curriculum of BSWRE

<table>
<thead>
<tr>
<th>Course Group Competence</th>
<th>Semester</th>
<th>Credit Unit</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Other Competence/ General national curriculum (OC)</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Design Competence on Water Resources Engineering Infrastructure (DCWREI)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Development and Management Competence on Water Resources Engineering (DMCWRE)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Supporting Competence (SC)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
BSWRE Lecturer Expertise Group

- Water structure design: 20%
- Water resources conservation: 21%
- Basic knowledge of water resources engineering: 13%
- Water resources information system: 14%
- Water resources utilization and application: 32%
<table>
<thead>
<tr>
<th>No</th>
<th>ELO</th>
<th>Teaching Method</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ability to apply mathematics, science, information technology, and engineering practice in water resources engineering.</td>
<td>Lecture, Tutorial, group discussion, laboratory works, field practical work, and guest lecture</td>
<td>Examination (quiz, final-exam), Laboratory reports, assignment reports, oral presentation and quizzes</td>
</tr>
<tr>
<td>2</td>
<td>Ability to manage and solve water resources engineering problems and analyzing the possible problem solving.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Effective managerial ability on the field of project management and activity standardization.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Ability to apply ethics and moral considerations in professional practice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Ability to communicate effectively and efficiently.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Ability in education and training and life-long learning.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Ability of self-awareness and teamwork.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Teaching and Learning Strategy

Group Discussion

Field work in rivers site

National Study Field Program

Soft Skill with Event Project "Pekan DAS Brantas"
## ACADEMIC STAFF PROFILE

<table>
<thead>
<tr>
<th>Category</th>
<th>Q</th>
<th>Age (year)</th>
<th>Master</th>
<th>Ph.D</th>
<th>Prof</th>
<th>Target 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Master</td>
</tr>
<tr>
<td>Professor</td>
<td>2</td>
<td>60</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Senior Lecturer / Ass. Prof</td>
<td>6</td>
<td>50-40</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Lecturer</td>
<td>7</td>
<td>40-35</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ass. Lecturer</td>
<td>8</td>
<td>35-30</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td></td>
<td>15</td>
<td>17</td>
<td>2</td>
<td>12</td>
</tr>
</tbody>
</table>

### Plan for 4 year:

- **Recruitment 4 New lectures**
- **An increasing number of professor**
- **An increasing number of PhD academic staff**
### Staff/student ratio and staff/graduate ratio

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Total of Teaching Staff</th>
<th>Number of Students</th>
<th>Number of Graduates</th>
<th>Number of Student per Total Teaching Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-13</td>
<td>35</td>
<td>599</td>
<td>61</td>
<td>17 : 1</td>
</tr>
<tr>
<td>2013-14</td>
<td>34</td>
<td>606</td>
<td>101</td>
<td>18 : 1</td>
</tr>
<tr>
<td>2014-15</td>
<td>36</td>
<td>621</td>
<td>70</td>
<td>17 : 1</td>
</tr>
<tr>
<td>2015-16</td>
<td>34</td>
<td>672</td>
<td>94</td>
<td>19 : 1</td>
</tr>
</tbody>
</table>

**Plan for 4 next year:**
- Recruitment 4 new lectures from 34 to 38
- Increasing number of graduates from 120 to 130 students
- Increasing the percentage (%) the number of graduating on time
## SUPPORTING STAFF

<table>
<thead>
<tr>
<th>No</th>
<th>Qualifications / Expertise</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>According to Qualifications</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>• Masters</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>• BA</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>• Dipl.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>• Others</td>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No</th>
<th>Qualifications / Expertise</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>According to Expertise</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>• Librarians</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>• Laboratory staff / Technician/ Operator</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>• Administrator</td>
<td>10</td>
</tr>
</tbody>
</table>

Plan for 4 next year:
Recruitment 3 New supporting staff from 17 to 20 persons increasing number of diploma to BA from 7 to 10 persons
STUDENT ADVICE AND SUPPORT

Beside of Academic Supervision by Lecturer for each student, there are also student advice and support unit such as:

BKPA (Academic Advising and Counseling Unit)

BKPA serving the students to overcome academic and non-academic problem, which will direct or indirectly affect the academic performance of the students. BKPA also hold workshop for junior lecturer improve advising and supervising skill.

JPC (Job Placement Center)

JPC supporting student to get company for internship and fresh graduate to get a job through a job fairs which is held twice a year.
INFRASTRUCTURE FACILITIES

Reading Room
INFRASTRUCTURE FACILITIES

Class Room

Meeting & Exam Room

Meeting & Exam Room

Administration Office
INFRASTRUCTURE FACILITIES

Lecture Room

Discussion area

Lecture Room

Discussion area
INFRASTRUCTURE FACILITIES

1. Basic Hydraulic Lab
INFRASTRUCTURE FACILITIES

2. Applied Hydraulic Lab
INFRASTRUCTURE FACILITIES

3. Soil and Ground Water Lab

4. River and Swap Lab
INFRASTRUCTURE FACILITIES

5. Water Structure Design Lab

6. Hydrology Lab
INFRASTRUCTURE FACILITIES

7. Water Resources Engineering Lab (30 m x 60 m = 1,800 m²)
   (under construction – Finished on December 2016)
Detail design drawing of WRE Laboratory
INFRASTRUCTURE FACILITIES
New Building for WRE – 6 floors, (under construction-)

Finished the end of December 2016
Student Profile

Floor 1: River & Swap Lab
Floor 2: Administration office
Floor 3: Lecture Room, 14 rooms
Floor 4: Class Room, 5 rooms
Floor 5: Class Room, 5 rooms
Floor 6: Hall Meeting room
INFRASTRUCTURE FACILITIES
# Student Profile

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Total Student</th>
<th>Student</th>
<th>Study Period (%)</th>
<th>Graduates GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Graduate</td>
<td>%</td>
<td>3.5 - 4 years</td>
</tr>
<tr>
<td>2010/2011</td>
<td>404</td>
<td></td>
<td>71</td>
<td>18</td>
</tr>
<tr>
<td>2011/2012</td>
<td>436</td>
<td></td>
<td>59</td>
<td>14</td>
</tr>
<tr>
<td>2012/2013</td>
<td>599</td>
<td></td>
<td>61</td>
<td>10</td>
</tr>
<tr>
<td>2013/2014</td>
<td>606</td>
<td></td>
<td>101</td>
<td>17</td>
</tr>
<tr>
<td>2014/2015</td>
<td>621</td>
<td></td>
<td>70</td>
<td>11</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>72</strong></td>
<td><strong>14</strong></td>
<td><strong>28.6</strong></td>
<td><strong>42.2</strong></td>
</tr>
</tbody>
</table>
http://pengairan.ub.ac.id/blog/tracer-study/

Alumni & Stakeholders and Feedback

Annual Meeting

Student and Alumni
- Online Survey
- Interview
- Suggestion Box

User
- Questionnaire (Email)
- Interview

Lecturer and Staff
- Questionnaire
- Direct input during meeting
- Suggestion Box

Society
- Input during community service activity

http://pengairan.ub.ac.id/blog/tracer-study/
Alumni Profile of BSWRE

Ministry of Public Works and Housing

Rector University of Brawijaya
Prof. Dr. Ir. Moh Bisri, MS
(Alumni ’79)

Director of River, Directorate of Water Resources
Ministry of Public Works and Housing
Ir. Hari Suprayogi, M.Eng, (Graduate 1984)

Head of the Central River Region (BBWS) Opak Serayu
Directorate General (DG) Water Resources (SDA) of the
Ministry of Public Works and Housing (PUPR),
Ir. Tri Bayu Adji, MA, (Graduate 1984)
Direktur PT. Tata Guna Patria, Jakarta
Dr. Ir. John P. Pantouw MS, (Graduate 85)

Head of National Association Of Indonesian Consultant, Branch DKI Jakarta
Ir. Peter Frans (Graduate 1988)
As a Directure for PT. Ciriajasa Engineering, Ltd
Manager of Civil Work in PT TOTAL OIL, 
Ir. M. Syamsudin Dananjaya, MMT, (Graduate 1991)

Balai Bendungan Direktorat Jenderal SDA 
Head of Dam Association 
Ir. Ahmad Zubaidi, M.Tech. (Graduate 1993)

Supt. Mine Civil, Road and Transporting. 
PT. Kaltim Prima Coal 
Ibadi Zalfatirsa, ST., MBA (Graduate 2005)
Alumni Profile of BSWRE

- Ministry of Public Works and Housing;
- Department Public work on Water Engineering sector.
- Consultants engineering Ltd, (government and private)
- Contractor engineering Ltd, (government and private)
- Universities or academics,
- Oil Company and Mine
- Agriculture sector,
- Water supply sector, etc,
Alumni Profile of BSWRE

## STAKEHOLDER SATISFACTION

<table>
<thead>
<tr>
<th>Item</th>
<th>Year data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2012</td>
</tr>
<tr>
<td>Integrity</td>
<td>3.07</td>
</tr>
<tr>
<td>professionnalisme</td>
<td>3.07</td>
</tr>
<tr>
<td>English</td>
<td>2.07</td>
</tr>
<tr>
<td>Communication</td>
<td>3.12</td>
</tr>
<tr>
<td>Teamwork</td>
<td>3.00</td>
</tr>
<tr>
<td>Self development</td>
<td>3.07</td>
</tr>
</tbody>
</table>

1. very unsatisfactory
2. less satisfactory
3. Satisfactory
4. Very satisfactory
Student Achievement

Dams National Design Competition 2015 : Gold Medal

Supervision : Dr. Eng. Andre P, MT
Student : 1. Aziz Rizal Prasetiyo
         2. Warid Muttafaq
         3. Imroatus Sholikhah
Video : Taliwang Dam
Student Achievement

Silver Medal on Macau Innovation and Invention Competition 2

Supervision by: Emma Yuliani, ST. MT., Ph.D
Student Name: 1. Maytri
2. Adibtiya
3. Yunus
Student Achievement

PIMNAS 27 Universitas Diponegoro - Bronze Medal
Student Achievement

PIMNAS 28 (Bronze Medal) Universitas Kendari

Supervision by: Emma Yuliani, ST. MT., Ph.D
Student Name: 1. Maytri
2. Adibtiya
3. Yunus
Student Achievement

National irrigation network planning competition at University of Muhammadiyah Makassar, 21–23 April 2015

Winner I  : Radya Gading W.; Rizki Adhitya N.; Ardian Suwinda
Winner II : Al Dirga Akbarshadana, Anas Zulfikar Rasyid, dan Rana Karinta Hapsari.
Winner III: M. Bagus Hari Santoso, Gigih Suryarawit, dan Yahya Muchaimin Aji.
Student Achievement

Best presenter on Competition scientific paper with the title "spore-Infiltration wells Pori, Faculty of Agricultural Technology UB

Finalist on Dams National Design Competition 2016
## Student Achievement

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>ACHIEVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Science Week 27</td>
<td>Bronze Medals</td>
</tr>
<tr>
<td>Dams National Design Competition</td>
<td>1st Winner</td>
</tr>
<tr>
<td>Rector Cup Volley ball Tournament</td>
<td>1st Winner</td>
</tr>
<tr>
<td>Brawijaya Olympic Badminton</td>
<td>1st Winner</td>
</tr>
<tr>
<td>Brawijaya Olympic Badminton Mixed Doubles Catagory</td>
<td>1st Winner</td>
</tr>
<tr>
<td>Brawijaya Olympic Band Festival</td>
<td>1st Winner</td>
</tr>
<tr>
<td>Olympic Brawijaya Women's Kempo</td>
<td>3rd Winner</td>
</tr>
<tr>
<td>Competition of Design Irrigation</td>
<td>1st Winner</td>
</tr>
<tr>
<td>Competition of Design Irrigation</td>
<td>2nd Winner</td>
</tr>
<tr>
<td>Competition of Design Irrigation</td>
<td>3rd Winner</td>
</tr>
<tr>
<td>Scientific papers</td>
<td>4th Winner</td>
</tr>
</tbody>
</table>
Student Activities, Students Association Website: [http://hmp.ub.ac.id/](http://hmp.ub.ac.id/);

“Pekan DAS Brantas Event”, every 4 (four) years.
Student Activities,
Students Association Website: [http://hmp.ub.ac.id/]

Clean Brantas River Activities each year: “Bersih 2 Sungai Brantas”
Student Activities

“WATER DAY” Activities
Student Activities

Promotion of WRE to Senior High School
Lecture in International Seminar

Dr. Ir. Pitojo Tri Juwono MT,
“International seminar for Reservoir and Sedimentation“, Japan 2014

Dian Sisinggih ST. MT. Ph.D,
“International seminar for Reservoir and Sedimentation“, Japan 2014
Lecture in International Seminar

Ir. Moh Shoclihin MT. PhD,
2nd International Young Researchers Workshop on River Basin Environment and Management on 5-6 January, 2015 Hanoi University of Science, Vietnam National University, Vietnam

Dr. Eng. Tri Budi Prayogo, ST., MT, South of Korea, 2016
Lecture in International Seminar

Dr. Eng. Riyanto Haribowo, ST., MT & WET (Water and Environment Technology) Conference, Tokyo Japan 2016

Collaboration

“MOU” between UB & USM Penang Malaysia, 2015
"MOU" between UB & University of Technology Sydney, 2016
### SWOT

#### STRENGTHS
- Good networking with alumni and Alumni have high position in national level
- Adequate infrastructure for educational process
- The management system has included planning, organizing, staffing, leading, representative and effective budgeting
- The average waiting period of graduates to work <3 month
- Good quality of students, they are good team work
- The composition of lecturers in the field of expertise and the age group is quite good

#### WEAKNESSES
- There are still low number of lecturers with professor title
- Human Resources that have credibility on the international level is still limited
- Many lecturer with master degree title (>50%)
- Completion of the thesis is very long (65%< 6 months)
- The laboratories have still got neither national accreditation certificate nor international

#### IMPROVEMENT
- The accelerated “program professor”
- Improved network with international organizations
- Acceleration master lecturer for doctoral study abroad
- Improving supervision of students and help with related agencies
- Accelerate to obtain the certification laboratory by KAN. (National Accreditation Committee.)
THANK YOU